Great Britain
en

# Installation, user and service manual

## Gas 310/610 ECO PRO

remeha the comfort innovators

# Dear customer,

Thank you for purchasing this appliance.

Please read this manual carefully before using the product and keep it in a safe place for future reference.

In order to ensure continued safe and efficient operation we recommend that the product is regularly maintained. Our Service and After Sales organization can assist with this.

We hope you will receive many years of satisfactory service.

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ISO 9001

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# 1 Safety

## 1.1 General safety instructions

For the installer:

**Danger**
If you smell gas:
1. Do not use naked flames, do not smoke and do not operate electrical contacts or switches (doorbell, lighting, motor, lift etc).
2. Shut off the gas supply.
3. Open the windows.
4. Trace possible leaks and seal them off immediately.
5. If the leak is upstream of the gas meter, notify the gas company.

**Danger**
If you smell flue gases:
1. Switch the boiler off.
2. Open the windows.
3. Trace possible leaks and seal them off immediately.

**Caution**
After maintenance or repair work, check the entire heating installation to ensure that there are no leaks.

For the end user:

**Danger**
If you smell gas:
1. Do not use naked flames, do not smoke and do not operate electrical contacts or switches (doorbell, lighting, motor, lift etc).
2. Shut off the gas supply.
3. Open the windows.
4. Report any leaks immediately.
5. Evacuate the property.
6. Contact a qualified installer.

**Danger**
If you smell flue gases:
1. Switch the boiler off.
2. Open the windows.
3. Report any leaks immediately.
4. Evacuate the property.
5. Contact a qualified installer.

**Warning**
Do not touch the flue gas pipes. Depending on the boiler settings, the temperature of the flue gas pipes can rise to over 60°C.

**Warning**
Do not touch radiators for long periods. Depending on the boiler settings, the temperature of the radiators can rise to over 60°C.

**Caution**
Ensure that the boiler is regularly serviced. Contact a qualified installer or arrange a maintenance contract for the servicing of the boiler.

**Caution**
Only genuine spare parts may be used.

**Note**
Regularly check for the presence of water and pressure in the heating installation.

## 1.2 Recommendations

**Danger**
This appliance must not be used by people (and children) with a physical, sensory or mental disability, or by people with a lack of technical experience, unless they are supervised by someone who can assure their safety, or they have been instructed in the correct use of the appliance. Do not allow children to play with the appliance.

**Warning**
Installation and maintenance of the boiler must be carried out by a qualified installer in accordance with local and national regulations.

**Warning**
Removal and disposal of the boiler must be carried out by a qualified installer in accordance with local and national regulations.

**Warning**
If the mains lead is damaged, it must be replaced by the original manufacturer, the manufacturer's dealer or another suitably skilled person to prevent hazardous situations from arising.

**Warning**
Always disconnect the mains supply and close the main gas tap when working on the boiler.

**Warning**
Check the entire system for leaks after maintenance and servicing work.

**Caution**
- Make sure the boiler can be reached at all times.
- The boiler must be installed in a frost-free area.
- In the case of a fixed connection to the power cord, you must always install a main bipolar switch with an opening gap of at least 3 mm (EN 60335-1).
- Drain the boiler and central heating system if you are not going to use your home for a long time and there is a chance of frost.
- The frost protection does not work if the boiler is out of operation.
- The boiler protection only protects the boiler, not the system.
- Check the water pressure in the system regularly. If the water pressure is lower than 0.8 bar, the system must be topped up (recommended water pressure between 1.5 and 2 bar).

**Note**
Keep this document near to the boiler.

**Note**
Casing panels may only be removed for maintenance and servicing purposes. Refit all panels when maintenance work and servicing are complete.

**Note**
Instruction and warning labels must never be removed or covered and must be clearly legible throughout the entire service life of the boiler. Replace damaged or illegible instruction and warning labels immediately.

**Note**
Modifications to the boiler require the written approval of **Remeha**.

## 1.3 Liabilities

### 1.3.1 Manufacturer's liability

Our products are manufactured in compliance with the requirements of the various Directives applicable. They are therefore delivered with the CE marking and any documents necessary. In the interests of the quality of our products, we strive constantly to improve them. We therefore reserve the right to modify the specifications given in this document.

Our liability as manufacturer may not be invoked in the following cases:
- Failure to abide by the instructions on installing the appliance.
- Failure to abide by the instructions on using the appliance.
- Faulty or insufficient maintenance of the appliance.

### 1.3.2 Installer's liability

The installer is responsible for the installation and initial commissioning of the appliance. The installer must abide by the following instructions:
- Read and follow the instructions given in the manuals provided with the appliance.
- Install the appliance in compliance with prevailing legislation and standards.
- Carry out initial commissioning and any checks necessary.
- Explain the installation to the user.
- If maintenance is necessary, warn the user of the obligation to check the appliance and keep it in good working order.
- Give all the instruction manuals to the user.

### 1.3.3 User's liability

To guarantee optimum running of the installation, you must abide by the following instructions:
- Read and follow the instructions given in the manuals provided with the appliance.
- Call on a qualified professional to carry out installation and initial commissioning.
- Get your installer to explain your installation to you.
- Have the required checks and services done by a qualified professional.
- Keep the instruction manuals in good condition close to the appliance.

# 2 About this manual

## 2.1 Additional documentation

The boiler can be fitted with various control panels. The selected control panel is supplied with its corresponding manual.

## 2.2 Symbols used

### 2.2.1 Symbols used in the manual

This manual uses various danger levels to draw attention to special instructions. We do this to improve user safety, to prevent problems and to guarantee correct operation of the appliance.

**Danger**
Risk of dangerous situations resulting in serious personal injury.

**Danger of electric shock**
Risk of electric shock.

**Warning**
Risk of dangerous situations resulting in minor personal injury.

**Caution**
Risk of material damage.

**Note**
Please note: important information.

**See**
Reference to other manuals or pages in this manual.

## 2.3 Abbreviations

| | |
|---|---|
| **PCU** | PCB for managing burner operation |
| **SU** | Safety PCB |

# 3 Technical specifications

## 3.1 Homologations

### 3.1.1 Certifications

Tab.1 Certifications

| | |
|---|---|
| CE identification number | **PIN 0063CL3613** |
| NOx class | **5 (EN 15420)** |
| Type of connection | $B_{23}$, $B_{23P}$ |
| | $C_{33}$, $C_{53}$, $C_{63}$, $C_{83}$, $C_{93}$ |

### 3.1.2 Unit categories

Tab.2 Unit categories

| Category | Gas type | Connection pressure (mbar) |
|---|---|---|
| $I_{2H}$ | G20 (H gas) | 20 |

**Note**
The factory setting of the boiler is for operation with the natural gas group G20 (H gas).

### 3.1.3 Directives

In addition to the legal requirements and guidelines, the supplementary guidelines in this manual must also be followed.

Supplements or subsequent regulations and guidelines that are valid at the time of installation shall apply to all regulations and guidelines specified in this manual.

### 3.1.4 Factory test

Before leaving the factory, each boiler is optimally set and tested for:

- Electrical safety.
- Adjustment of ($O_2$/$CO_2$).
- Water tightness.
- Gas tightness.
- Parameter setting.

## 3.2 Technical data

### 3.2.1 Technical data Gas 310 ECO PRO

Tab.3 General

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Number of sections | | | 5 | 6 | 7 | 8 | 9 | 10 |
| Nominal output (Pn) (80/60°C) | min<br>max(1) | kW | 51<br>261 | 65<br>327 | 79<br>395 | 92<br>461 | 106<br>530 | 119<br>601 |
| Nominal output (Pn) (50/30°C) | max(1) | kW | 279 | 350 | 425 | 497 | 574 | 651 |

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Nominal input (Qn)<br>(Hi) | min<br>max(1) | kW | 54<br>266 | 68<br>333 | 82<br>402 | 95<br>469 | 109<br>539 | 122<br>610 |
| Nominal input (Qn)<br>(Hs) | min<br>max(1) | kW | 60<br>295 | 75<br>369 | 96<br>445 | 105<br>520 | 121<br>598 | 135<br>677 |
| Full load central heating efficiency (Hi) (80°C/60°C) | | % | 98.0 | 98.1 | 98.2 | 98.3 | 98.4 | 98.5 |
| Full load central heating efficiency (Hi) (50/30°C) | | % | 104.8 | 105.2 | 105.6 | 106.0 | 106.4 | 106.4 |
| Central heating efficiency under part load (Hi)<br>(Return temperature 60°C) | | % | 94.7 | 95.3 | 95.8 | 96.3 | 96.8 | 97.3 |
| Annual yield G20 (DIN 4702, Part 8) | | % | 109.6 | 109.5 | 109.4 | 109.3 | 109.2 | 109.1 |
| Part load central heating efficiency (92/42 EEC)<br>(Return temperature 30°C) | | % | 109.2 | 109.0 | 108.8 | 108.6 | 108.3 | 108.1 |
| (1) Factory setting | | | | | | | | |

Tab.4 Gas and flue gas data

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Gas inlet pressure G20 (H gas) | min<br>max | mbar | 17<br>30 | 17<br>30 | 17<br>100 | 17<br>100 | 17<br>100 | 17<br>30 |
| Gas consumption G20 (H gas) | min<br>max | $m^3/h$ | 5.7<br>28.1 | 7.2<br>35.2 | 8.7<br>42.5 | 10.1<br>49.6 | 11.5<br>57.0 | 12.9<br>64.6 |
| NOx annual emissions (BREAM) (EN15420) | | mg/kWh | 33 | 35 | 32 | 29 | 36 | 26 |
| Flue gas mass flow rate | min<br>max | kg/h | 91<br>448 | 114<br>560 | 138<br>676 | 160<br>789 | 183<br>907 | 205<br>1026 |
| Flue gas temperature | min<br>max | °C | 30<br>80 | 30<br>80 | 30<br>80 | 30<br>80 | 30<br>80 | 30<br>80 |
| Maximum counter pressure for flue gas outlet | | Pa | 130 | 120 | 130 | 150 | 150 | 150 |
| Chimney losses | 80/60°C | % | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Stoppage loss (EN 15420)<br>(Without heat exchanger insulation kit) | (ΔT = 30K)(1) | W<br>% | 571<br>0.21 | 591<br>0.18 | 611<br>0.15 | 630<br>0.13 | 650<br>0.12 | 670<br>0.11 |
| Number of stars (92/42/EEC) | | | 4 | 4 | 4 | 4 | 4 | 4 |
| (1) ΔT = (boiler temperature – ambient temperature). | | | | | | | | |

Tab.5 Central heating circuit data

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Water content | | l | 49 | 60 | 71 | 82 | 93 | 104 |
| Water operating pressure | min | bar | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Water operating pressure (PMS) | max | bar | 7 | 7 | 7 | 7 | 7 | 7 |
| Water temperature | max | °C | 110 | 110 | 110 | 110 | 110 | 110 |
| Operating temperature | max | °C | 90 | 90 | 90 | 90 | 90 | 90 |
| Pressure drop secondary circuit (ΔT=20K) | | mbar | 113 | 110 | 120 | 110 | 125 | 130 |
| Pressure drop secondary circuit (ΔT=11K) | | mbar | 374 | 364 | 397 | 364 | 413 | 435 |
| Minimum flow | | $m^3/h$ | 3.4 | 4.2 | 5.1 | 5.9 | 6.8 | 7.8 |

Tab.6 Electrical data

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Supply voltage | | VAC/Hz | 230/50 | 230/50 | 230/50 | 230/50 | 230/50 | 230/50 |
| Power consumption - full load | max | W | 279 | 334 | 426 | 543 | 763 | 723 |
| Power consumption – part load | min | W | 46 | 46 | 58 | 61 | 62 | 55 |
| Power consumption – standby | min | W | 6 | 6 | 6 | 6 | 6 | 7 |
| Electrical protection index(1) | | IP | X1B | X1B | X1B | X1B | X1B | X1B |
| Fuse – main fuse F2 | | (A) | 10 | 10 | 10 | 10 | 10 | 10 |
| Fuse – PCB F1 | | (A) | 2 | 2 | 2 | 2 | 2 | 2 |
| (1) For a room-sealed system. | | | | | | | | |

Tab.7 Other data

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Total weight (empty) | | kg | 364 | 398 | 433 | 495 | 531 | 568 |
| Average acoustic level (1) at a distance of 1 metre from the boiler | | dB(A) | 61 | 61 | 65 | 65 | 65 | 65 |
| Ambient temperature | max | °C | 40 | 40 | 40 | 40 | 40 | 40 |
| (1) Maximum | | | | | | | | |

Tab.8 Technical parameters

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Condensing boiler | | | Yes | Yes | Yes | - | - | - |
| Low-temperature boiler(1) | | | Yes | Yes | Yes | - | - | - |
| B1 boiler | | | No | No | No | - | - | - |
| Cogeneration space heater | | | No | No | No | - | - | - |
| Combination heater | | | No | No | No | - | - | - |
| **Rated heat output** | *Prated* | kW | 261 | 327 | 395 | - | - | - |
| Useful heat output at nominal heat output and high temperature operation(2) | $P_4$ | kW | 261 | 327 | 395 | - | - | - |
| Useful heat output at 30% of rated heat output and low temperature regime(5) | $P_1$ | kW | 87.6 | 109.5 | 132.0 | - | - | - |
| **Seasonal space heating energy efficiency** | $\eta_s$ | % | - | - | - | - | - | - |
| Useful efficiency at rated heat output and high temperature regime(6) | $\eta_4$ | % | 88.2 | 88.3 | 88.4 | - | - | - |
| Useful efficiency at 30% of rated heat output and low temperature regime(5) | $\eta_1$ | % | 98.6 | 98.6 | 98.5 | - | - | - |
| **Auxiliary electricity consumption** | | | | | | | | |
| Full load | *elmax* | kW | 0.3 | 0.3 | 0.3 | - | - | - |
| Part load | *elmin* | kW | 0.1 | 0.1 | 0.1 | - | - | - |
| Standby mode | $P_{SB}$ | kW | 0.006 | 0.006 | 0.006 | - | - | - |
| **Other items** | | | | | | | | |
| Standby heat loss | $P_{stby}$ | kW | - | - | - | - | - | - |
| Ignition burner power consumption | $P_{ign}$ | kW | - | - | - | - | - | - |

| Gas 310 ECO PRO | | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|---|
| Annual energy consumption | $Q_{HE}$ | kWh<br>GJ | - | - | - | - | - | - |
| Sound power level, indoors | $L_{WA}$ | dB | 69 | 69 | 69 | - | - | - |
| Emissions of nitrogen oxides | $NO_X$ | mg/kWh | 59 | 50 | 49 | - | - | - |

(1) Low temperature means 30°C for condensing boilers, 37°C for low temperature boilers and 50°C (at heater inlet) for other heating appliances.
(2) High temperature operation means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.

**See**
Refer to the back cover for contact details.

### 3.2.2 Technical data Gas 610 ECO PRO

Tab.9 General

| Gas 610 ECO PRO | | | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|---|
| Number of sections | | | 2x5 | 2x6 | 2x7 | 2x8 | 2x9 | 2x10 |
| Nominal output (Pn)<br>(80/60°C) | min<br>max(1) | kW | 69<br>522 | 87<br>654 | 123<br>790 | 122<br>922 | 148<br>1060 | 158<br>1202 |
| Nominal output (Pn)<br>(50/30°C) | max(1) | kW | 558 | 700 | 850 | 994 | 1148 | 1303 |
| Nominal input (Qn)<br>(Hi) | min<br>max(1) | kW | 72<br>532 | 91<br>666 | 128<br>804 | 127<br>938 | 170<br>1078 | 162<br>1220 |
| Nominal input (Qn)<br>(Hs) | min<br>max(1) | kW | 80<br>590 | 101<br>738 | 142<br>890 | 141<br>1040 | 170<br>1196 | 180<br>1354 |
| Full load central heating efficiency (Hi) (80°C/60°C) | | % | 98.0 | 98.1 | 98.2 | 98.3 | 98.4 | 98.5 |
| Full load central heating efficiency (Hi) (50/30°C) | | % | 104.8 | 105.2 | 105.6 | 106.0 | 106.4 | 106.8 |
| Central heating efficiency under part load (Hi)<br>(Return temperature 60°C) | | % | 94.7 | 95.3 | 95.8 | 96.3 | 96.8 | 97.3 |
| Annual yield G20 (DIN 4702, Part 8) | | % | 109.6 | 109.5 | 109.4 | 109.3 | 109.2 | 109.1 |
| Part load central heating efficiency (92/42 EEC)<br>(Return temperature 30°C) | | % | 109.2 | 109.0 | 108.8 | 108.6 | 108.3 | 108.1 |

(1) Factory setting.

Tab.10 Gas and flue gas data

| Gas 610 ECO PRO | | | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|---|
| Gas inlet pressure G20 (H gas) | min<br>max | mbar | 17<br>30 | 17<br>30 | 17<br>100 | 17<br>100 | 17<br>100 | 17<br>30 |
| Gas consumption G20 (H gas) | min<br>max | $m^3/h$ | 7.6<br>56.2 | 9.6<br>70.4 | 13.5<br>85.0 | 13.4<br>99.2 | 16.2<br>114.0 | 17.2<br>129.2 |
| NOx annual emissions (BREAM) (EN15420) | | mg/kWh | 33 | 35 | 32 | 29 | 36 | 26 |
| Flue gas mass flow rate | min<br>max | kg/h | 182<br>896 | 228<br>1120 | 276<br>1352 | 320<br>1578 | 366<br>1814 | 410<br>2052 |
| Flue gas temperature | min<br>max | °C | 30<br>80 | 30<br>80 | 30<br>80 | 30<br>80 | 30<br>80 | 30<br>80 |
| Maximum counter pressure for flue gas outlet | | Pa | 130 | 120 | 130 | 130 | 130 | 150 |

| Gas 610 ECO PRO | | | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|---|
| Chimney losses | 80/60°C | % | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Stoppage loss (EN 15420)<br>(Without heat exchanger insulation kit) | (ΔT = 30K)(1) | W<br>% | 1142<br>0.21 | 1182<br>0.18 | 1222<br>0.15 | 1260<br>013 | 1300<br>0.12 | 1340<br>0.11 |
| (1) ΔT = (boiler temperature – ambient temperature). | | | | | | | | |

Tab.11 Central heating circuit data

| Gas 610 ECO PRO | | | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|---|
| Water content | (per unit) | l | 49 | 60 | 71 | 82 | 93 | 104 |
| Water operating pressure | min | bar | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Water operating pressure (PMS) | max | bar | 7 | 7 | 7 | 7 | 7 | 7 |
| Water temperature | max | °C | 110 | 110 | 110 | 110 | 110 | 110 |
| Operating temperature | max | °C | 90 | 90 | 90 | 90 | 90 | 90 |
| Pressure drop secondary circuit (ΔT=20K) | (per unit) | mbar | 113 | 110 | 120 | 110 | 125 | 130 |
| Pressure drop secondary circuit (ΔT=11K) | (per unit) | mbar | 374 | 364 | 397 | 364 | 413 | 435 |
| Minimum flow | (per unit) | $m^3/h$ | 3.4 | 4.2 | 5.1 | 5.9 | 6.8 | 7.8 |

Tab.12 Electrical data

| Gas 610 ECO PRO | | | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|---|
| Supply voltage | | VAC/Hz | 230/50 | 230/50 | 230/50 | 230/50 | 230/50 | 230/50 |
| Power consumption - full load | max | W | 558 | 668 | 852 | 1086 | 1526 | 1446 |
| Power consumption – part load | min | W | 92 | 92 | 116 | 122 | 124 | 110 |
| Power consumption – standby | min | W | 12 | 12 | 12 | 12 | 12 | 14 |
| Electrical protection index(1) | | IP | X1B | X1B | X1B | X1B | X1B | X1B |
| Fuse – main fuse F2 | | (A) | 10 | 10 | 10 | 10 | 10 | 10 |
| Fuse – PCB F1 | | (A) | 2 | 2 | 2 | 2 | 2 | 2 |
| (1) For a room-sealed system. | | | | | | | | |

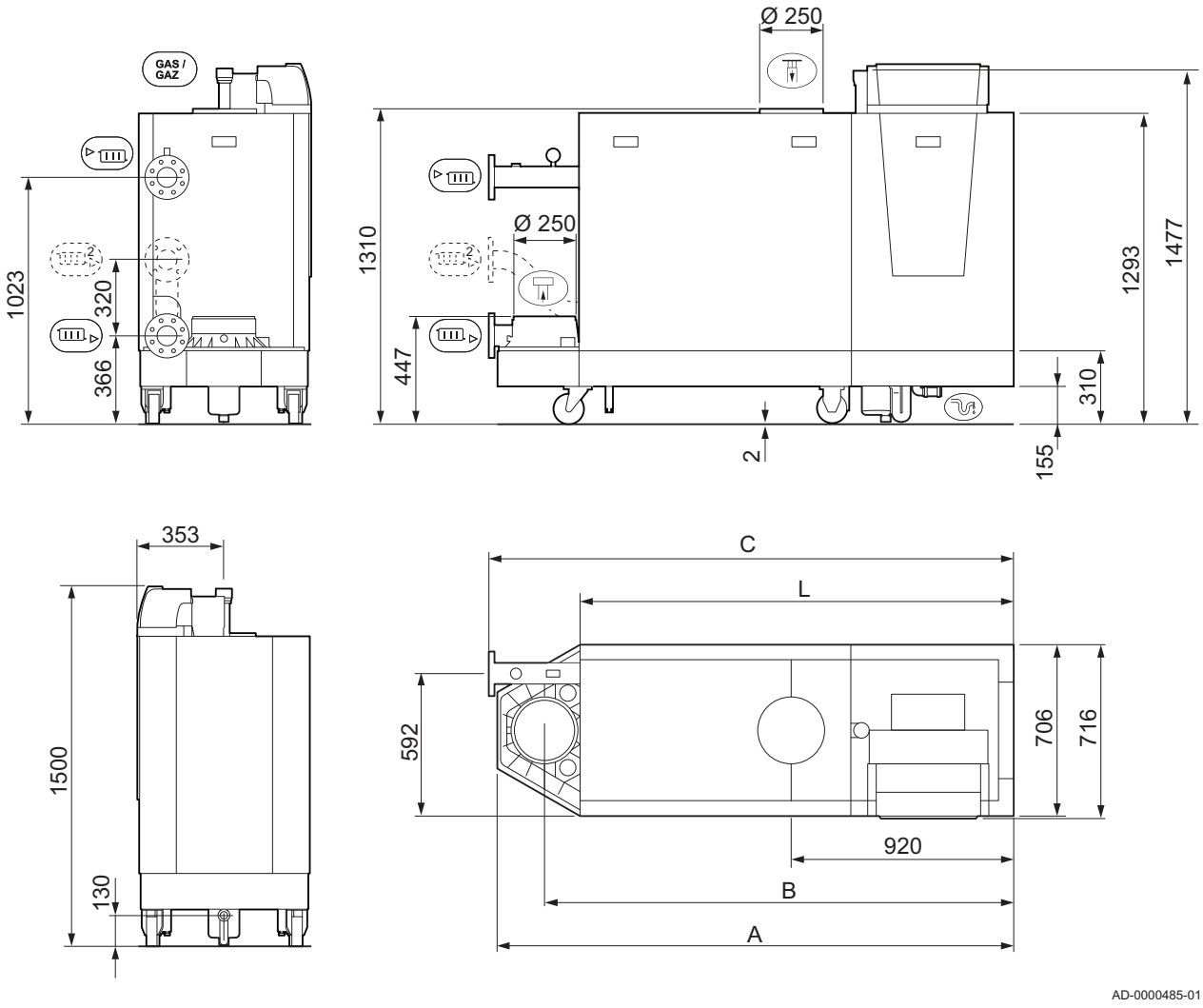
Tab.13 Other data

| Gas 610 ECO PRO | | | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|---|
| Total weight (empty) | | kg | 707 | 771 | 837 | 957 | 1025 | 1095 |
| Average acoustic level (1) at a distance of 1 metre from the boiler | | dB(A) | 64 | 64 | 68 | 68 | 68 | 68 |
| Ambient temperature | max | °C | 40 | 40 | 40 | 40 | 40 | 40 |
| (1) Maximum | | | | | | | | |

## 3.3 Dimensions and connections

### 3.3.1 Boiler type Gas 310 ECO PRO

Fig.1 Dimensions Gas 310 ECO PRO

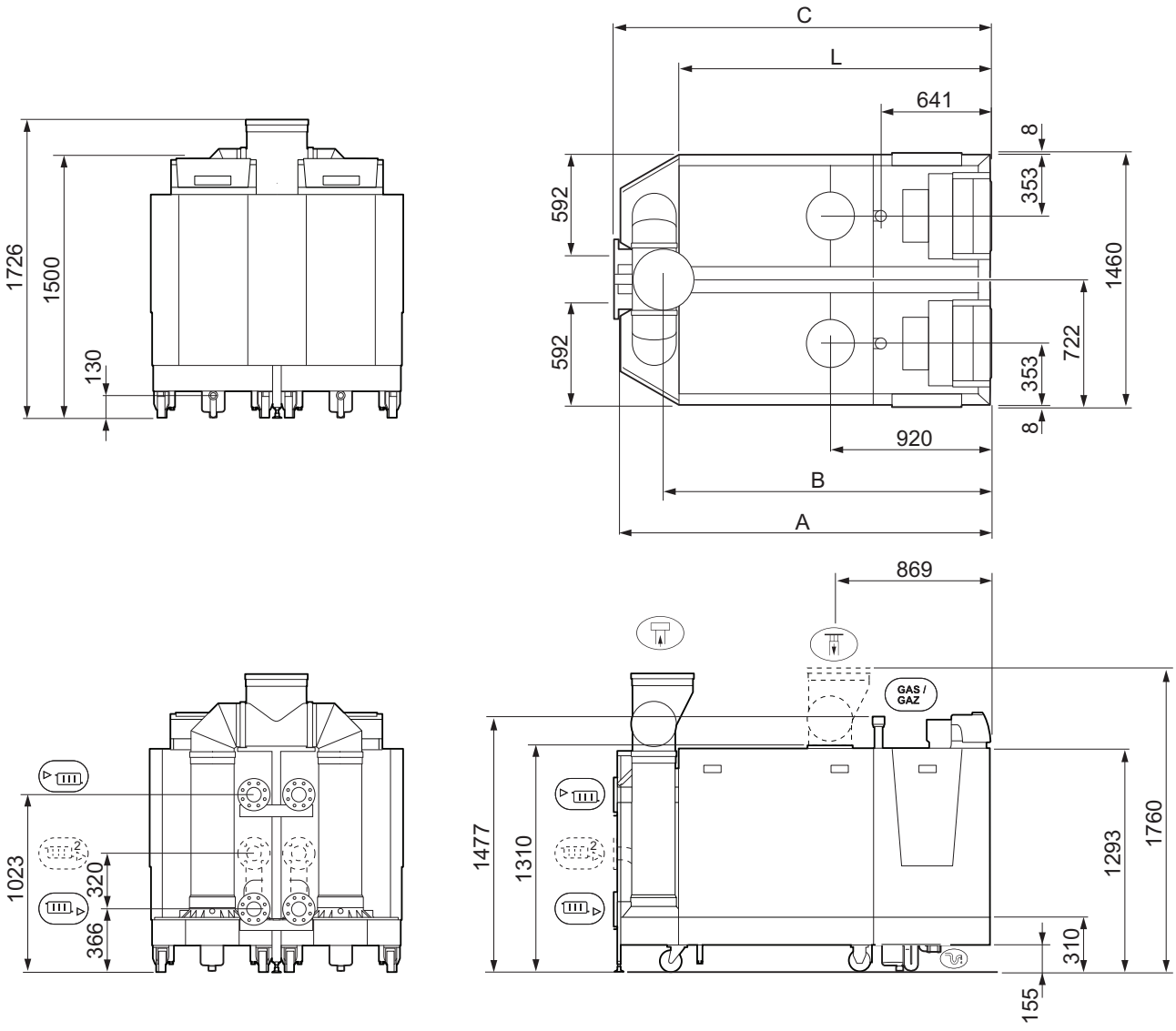



| | Gas 310 ECO PRO | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|
| A | | 1833 mm | 1833 mm | 1833 mm | 2142 mm | 2142 mm | 2142 mm |
| B | | 1635 mm | 1635 mm | 1635 mm | 1944 mm | 1944 mm | 1944 mm |
| C | | 1862 mm | 1862 mm | 1862 mm | 2172 mm | 2172 mm | 2172 mm |
| L | | 1490 mm | 1490 mm | 1490 mm | 1800 mm | 1800 mm | 1800 mm |
| ▸ | Central heating circuit flow | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) |
| ▸ | Central heating circuit return | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) |
| GAS/ GAZ | Gas connection | G2" | G2" | G2" | G2" | G2" | G2" |
| | Condensation outlet | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) |
| | Flue gas outlet | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm |
| | Air supply | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm |

| | Gas 310 ECO PRO | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|
| 2 | Second return (optional) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) |

### 3.3.2 Boiler type Gas 610 ECO PRO

Fig.2 Dimensions Gas 610 ECO PRO

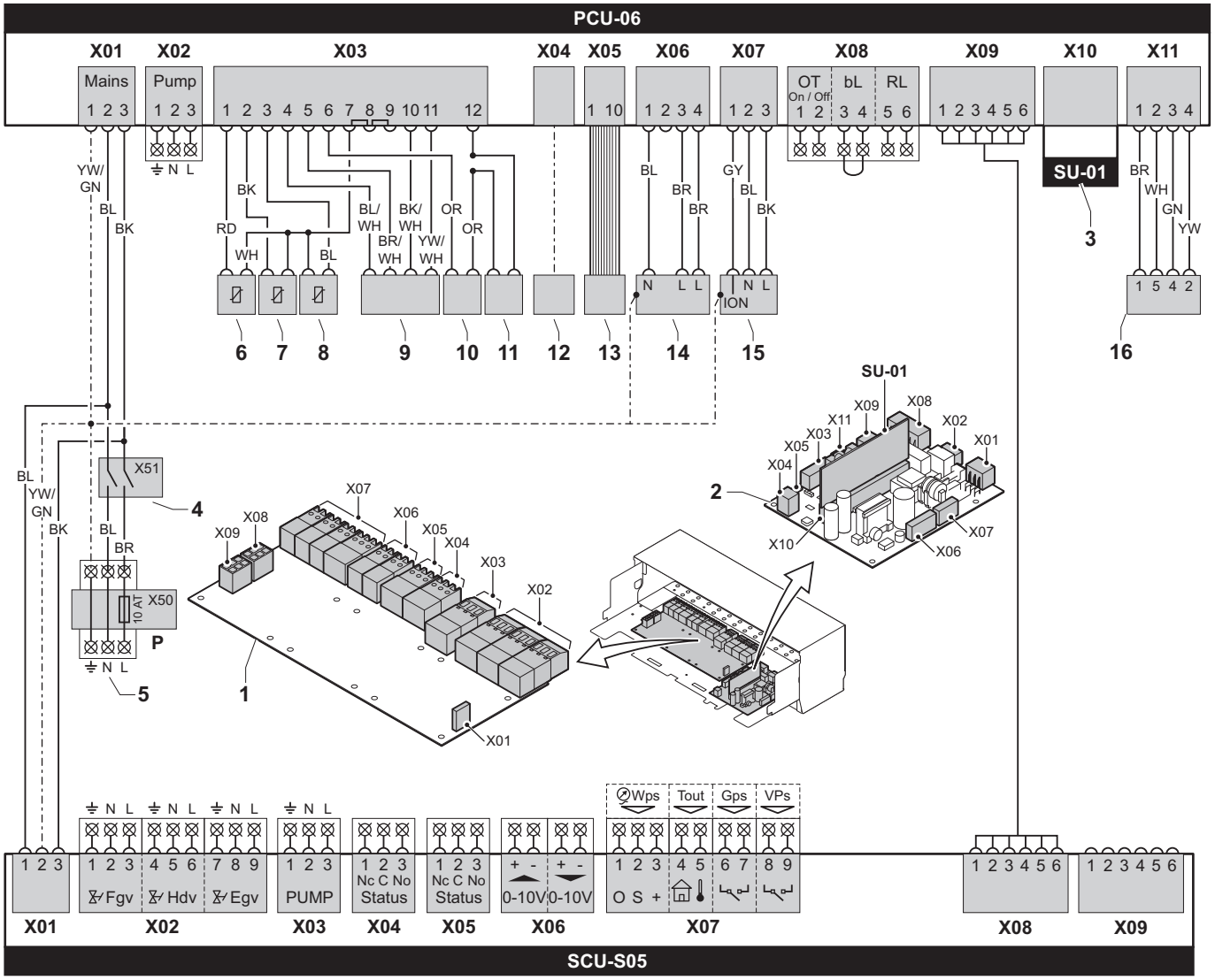



| | Gas 610 ECO PRO | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|
| A | | 1833 mm | 1833 mm | 1833 mm | 2142 mm | 2142 mm | 2142 mm |
| B | | 1582 mm | 1582 mm | 1582 mm | 1892 mm | 1892 mm | 1892 mm |
| C | | 1862 mm | 1862 mm | 1862 mm | 2172 mm | 2172 mm | 2172 mm |
| L | | 1490 mm | 1490 mm | 1490 mm | 1800 mm | 1800 mm | 1800 mm |
| ▶ | Central heating circuit flow | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) |
| ▶ | Central heating circuit return | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) | Flange NW 80 (DIN 2576) |
| GAS/ GAZ | Gas connection | G2" | G2" | G2" | G2" | G2" | G2" |

| | Gas 610 ECO PRO | 570 | 710 | 860 | 1000 | 1150 | 1300 |
|---|---|---|---|---|---|---|---|
| | Condensation outlet | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) | Ø 32 mm (internal) |
| | Flue gas outlet | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm | Ø 250 mm |
| | Air supply<br>Air supply manifold | Ø 250 mm<br>Ø 350 mm | Ø 250 mm<br>Ø 350 mm | Ø 250 mm<br>Ø 350 mm | Ø 250 mm<br>Ø 350 mm | Ø 250 mm<br>Ø 350 mm | Ø 250 mm<br>Ø 350 mm |
| | Second return (optional) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) | Flange NW 65 (DIN 2576) |

## 3.4 Electrical diagram

Fig.3 Electrical diagram




1 Extended PCB (SCU-05)
2 Standard PCB (PCU-06)
3 Safety PCB (SCU-01)
4 On/Off switch (AU)
5 Power supply (P)
6 Current detector (Fs)
7 Heat exchanger temperature sensor (HEs)
8 Return temperature sensor (RTs)
9 Parameter storage (PSU)
10 High level switch (HLs)
11 Air pressure differential switch (PS)
12 Computer connection (PC)
13 Control panel (HMI)
14 Gas valve unit (GB)
15 Ignition transformer (IT)
16 Fan (FAN)

# 4 Description of the product

## 4.1 General description

The Gas 310 ECO PRO/Gas 610 ECO PRO is a floor-standing gas boiler with the following features:

- High-efficiency heating.
- Heat exchanger made of cast aluminium sections.
- Limited emissions of polluted substances.
- Has transport wheels as standard.
- Left- or right-hand version of the water and flue gas side connections possible.
- Separable for assembly in boiler room.
- HMI Gas 310/610 ECO PRO control panel.
- The Gas 610 ECO PRO comprises a left-hand and a right-hand module. These are combined on the flue gas side (optionally on the air side) and also in terms of their casing.

The following boiler types are available:

| |
|---|
| Gas 310 ECO PRO 285<br>Gas 310 ECO PRO 355<br>Gas 310 ECO PRO 430<br>Gas 310 ECO PRO 500<br>Gas 310 ECO PRO 575<br>Gas 310 ECO PRO 650 |
| Gas 610 ECO PRO 570<br>Gas 610 ECO PRO 710<br>Gas 610 ECO PRO 860<br>Gas 610 ECO PRO 1000<br>Gas 610 ECO PRO 1150<br>Gas 610 ECO PRO 1300 |

## 4.2 Operating principle

### 4.2.1 Regulating the water temperature

The boiler is fitted with an electronic temperature control with a flow and return temperature sensor. The flow temperature can be adjusted between 20°C and 90°C. The boiler modulates back when the set flow temperature is reached. The switch-off temperature is the set flow temperature + 5°C.

### 4.2.2 Protection against shortage of water

The boiler is fitted with protection against a shortage of water that is based on temperature differences (difference in temperature between flow and return). From ΔT = 25K (factory setting) the boiler reduces its output by modulating to remain in operation as long as possible. At ΔT ≥ 25K, the boiler goes into part load. At ΔT > 25 + 5K, the boiler goes into a normal control stop (blocking).

### 4.2.3 Maximum protection

The maximum temperature protection shuts the boiler down in the event that an excessively high water temperature (110 °C) is reached. Once the cause of the fault has been remedied, the boiler can be unlocked by pressing the **RESET** button for 2 seconds.

### 4.2.4 Air pressure differential switch

Before a start and when the boiler is in operation, the air pressure differential switch **PS** measures the difference in pressure between the measuring points on the back of the heat exchanger $p^+$ and the air box $p^-$. If the pres-

sure difference is greater than 6 mbar, then the boiler will lock out. Once the cause of the fault has been remedied, the boiler can be unlocked by pressing the **RESET** button for 2 seconds.

### 4.2.5 Circulating pump

The boiler has a built-in pump. A circulating pump can be installed on the connector of the standard control PCB. This can be an on/off pump or a modulating pump (with 0 - 10 V control).

The pump settings can be changed.

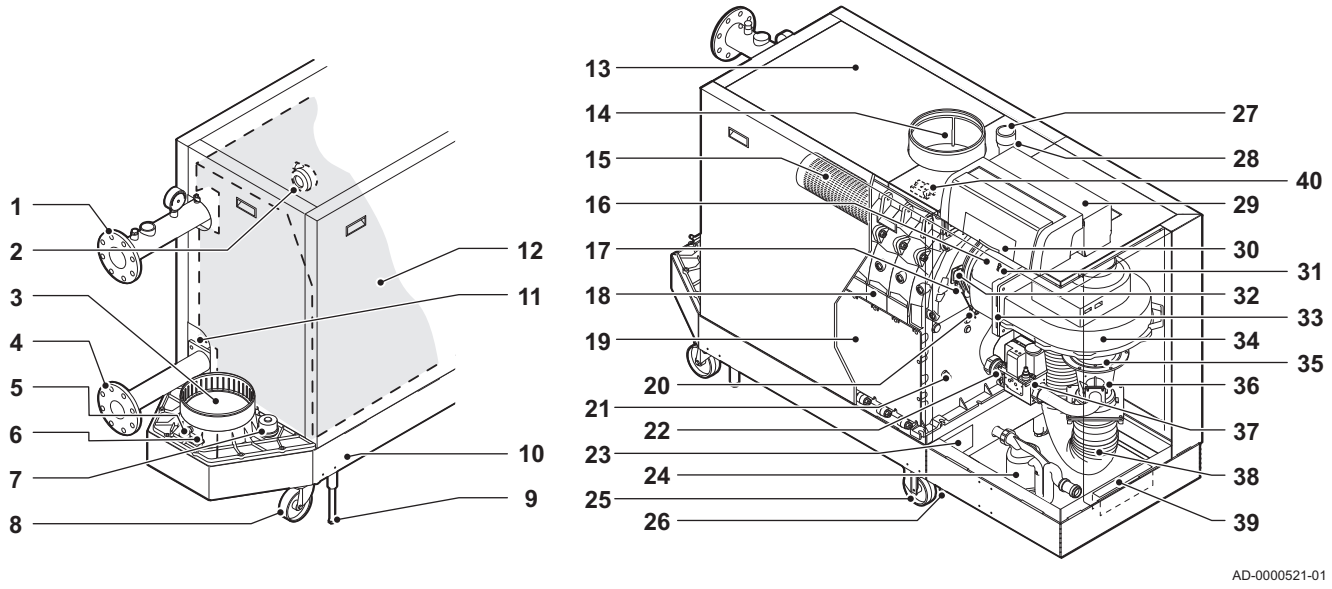
**See**
Manual for the control panel.

**For more information, see**
Analogue output (Ctrl), page 42

## 4.3 Main components

### 4.3.1 Main components Gas 310 ECO PRO

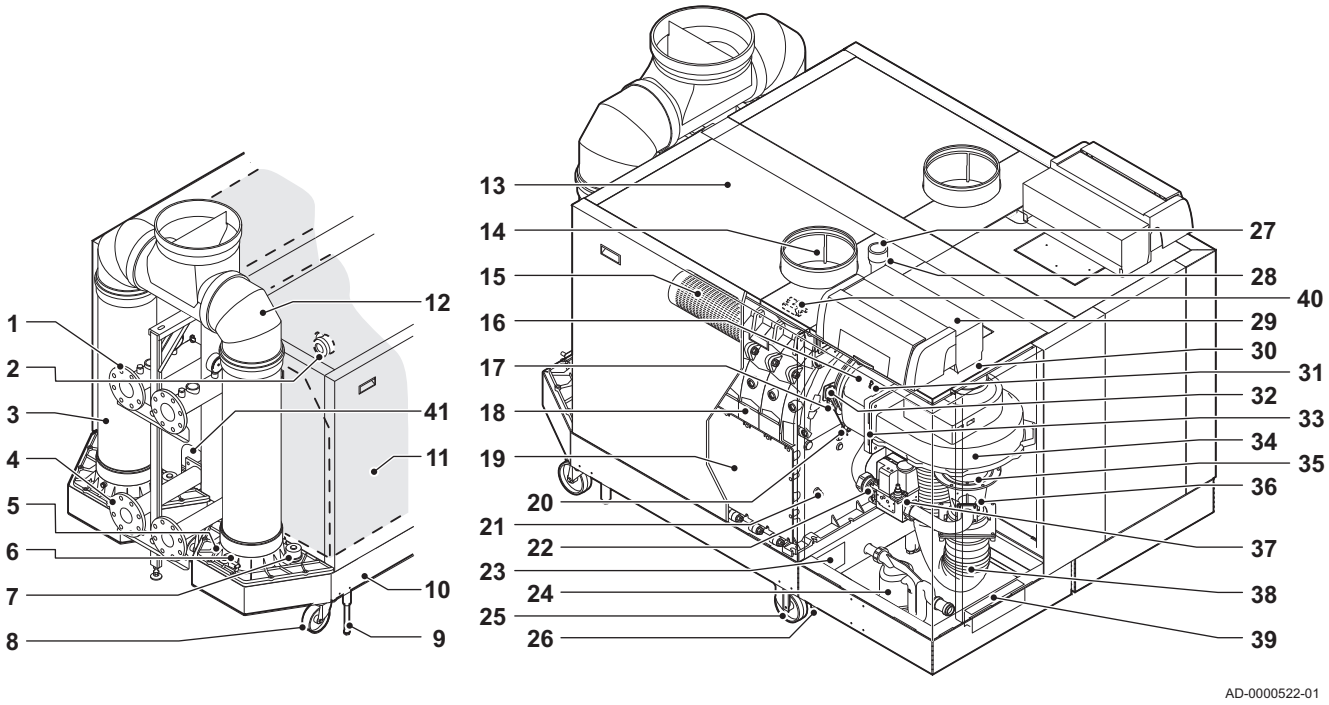
Fig.4 Gas 310 ECO PRO




1 Flow connection
2 Air pressure differential switch
3 Flue gas outlet
4 Return connection
5 Flue gas measuring point
6 Flue gas thermostat (accessory)
7 Condensate collector sealant cap
8 Pivoting castor
9 Adjustment bolt
10 Frame
11 Connection for second return (accessory)
12 Heat exchanger insulation kit (accessory)
13 Boiler casing
14 Air supply
15 Burner
16 Adapter
17 Ignition/ionisation electrode
18 Heat exchanger
19 Inspection trap
20 Temperature sensor for heat exchanger
21 Return temperature sensor
22 Gas filter
23 Data plate
24 Siphon
25 Transport wheels
26 Adjustment bolt
27 Gas connection
28 Gas pressure measuring point
29 Control panel
30 Installation option for weather-compensated boiler control
31 Pressure measurement point
32 Flame inspection window
33 Non-return valve
34 Fan
35 Extension piece
36 Venturi
37 Gas valve unit
38 Air supply hose
39 Document holder
40 Ignition transformer

### 4.3.2 Main components Gas 610 ECO PRO

Fig.5 Gas 610 ECO PRO




1 Flow connection
2 Air pressure differential switch
3 Flue gas outlet
4 Return connection
5 Flue gas measuring point
6 Flue gas thermostat (accessory)
7 Condensate collector sealant cap
8 Pivoting castor
9 Adjustment bolt
10 Frame
11 Heat exchanger insulation kit (accessory)
12 Flue gas collector
13 Boiler casing
14 Air supply
15 Burner
16 Adapter
17 Ignition/ionisation electrode
18 Heat exchanger
19 Inspection trap
20 Temperature sensor for heat exchanger
21 Return temperature sensor
22 Gas filter
23 Data plate
24 Siphon
25 Transport wheels
26 Adjustment bolt
27 Gas connection
28 Gas pressure measuring point
29 Control panel
30 Installation option for weather-compensated boiler control
31 Pressure measurement point
32 Flame inspection window
33 Non-return valve
34 Fan
35 Extension piece
36 Venturi
37 Gas valve unit
38 Air supply hose
39 Document holder
40 Ignition transformer
41 Connection for second return (accessory)

## 4.4 Description of the control panel

The boiler is supplied with a HMI Gas 310/610 ECO PRO control panel. The control panel is mounted in the boiler.

**See**
- Assembly instructions for the control panel.
- Manual for the control panel.

**Note**
For operation of the Gas 610 ECO PRO boiler: each module has its own control panel.

## 4.5 Standard delivery

The delivery includes:

- The boiler
- Complete siphon
- Filling and drain valve
- Gas filter
- Documentation
- Water quality instructions

Please fit these components in the order described in this manual.

**Note**
This manual only deals with the standard scope of supply. For the installation or mounting of any accessories delivered with the boiler, refer to the corresponding mounting instructions.

## 4.6 Accessories and options

Various accessories can be obtained for the boiler.

**Note**
Contact us for more information.

# 5 Before installation

## 5.1 Installation regulations

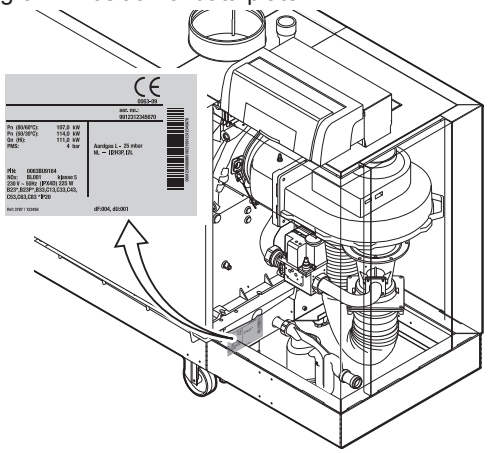
**Warning**
The installer must be registered with Gas Safe and have the correct ACS qualifications.

**Note**
Practical guidelines - see the latest version.

## 5.2 Choice of the location

### 5.2.1 Data plate

Fig.6 Position of data plate



AD-0000487-01

The identification plate is located behind the boiler casing on the frame, near the syphon connection. The data plate provides important information on the boiler specifications such as the model and the device category.

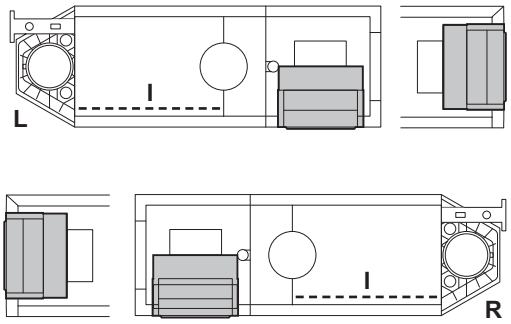
### 5.2.2 Installing the boiler Gas 310 ECO PRO

- Use the guidelines and the required installation space as a basis for determining the correct place to install the boiler.
- When determining the correct installation area, take account of the permitted position of the flue gas outlet and/or air supply outlet.
- Ensure that there is sufficient space around the boiler for good access and ease of maintenance.
- A technical clearance of at least 80 cm is required at the front (service side) of the boiler. However, we recommend that the clearance is at least 100 cm. Above the boiler, we recommend a clearance of at least 40 cm (when using a dirt trap, the clearance must be at least 65 cm). A minimum of 30 cm is required on the side of the flue gas outlet, and a minimum of 30 cm is also required on the other side (or 80 cm, if this is operating side).

**Danger**
It is forbidden to store, even temporarily, combustible products and substances in or near the boiler.

**Caution**
- The boiler must be installed in a frost-free area.
- An earthed electrical connection must be available close to the boiler.
- A connection to the sewer must be present for the condensate drain close to the boiler.

Fig.7 Left-hand and right-hand versions

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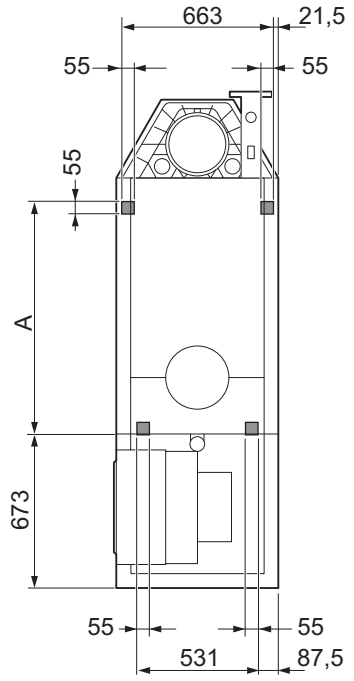
**L** Left-hand version
**R** Right-hand version
**I** Inspection trap (service side)

The service side with the inspection trap on the heat exchanger is considered to be the front of the boiler. The boiler is available in both a 'left-hand' and 'right-hand' version. This means that the hydraulic connections and the flue gas discharge are situated on either the left or the right-hand side of the boiler. The control panel is on the front as standard, but can easily be rotated so that it is on the short side.

Fig.8 Position of the adjustment bolts

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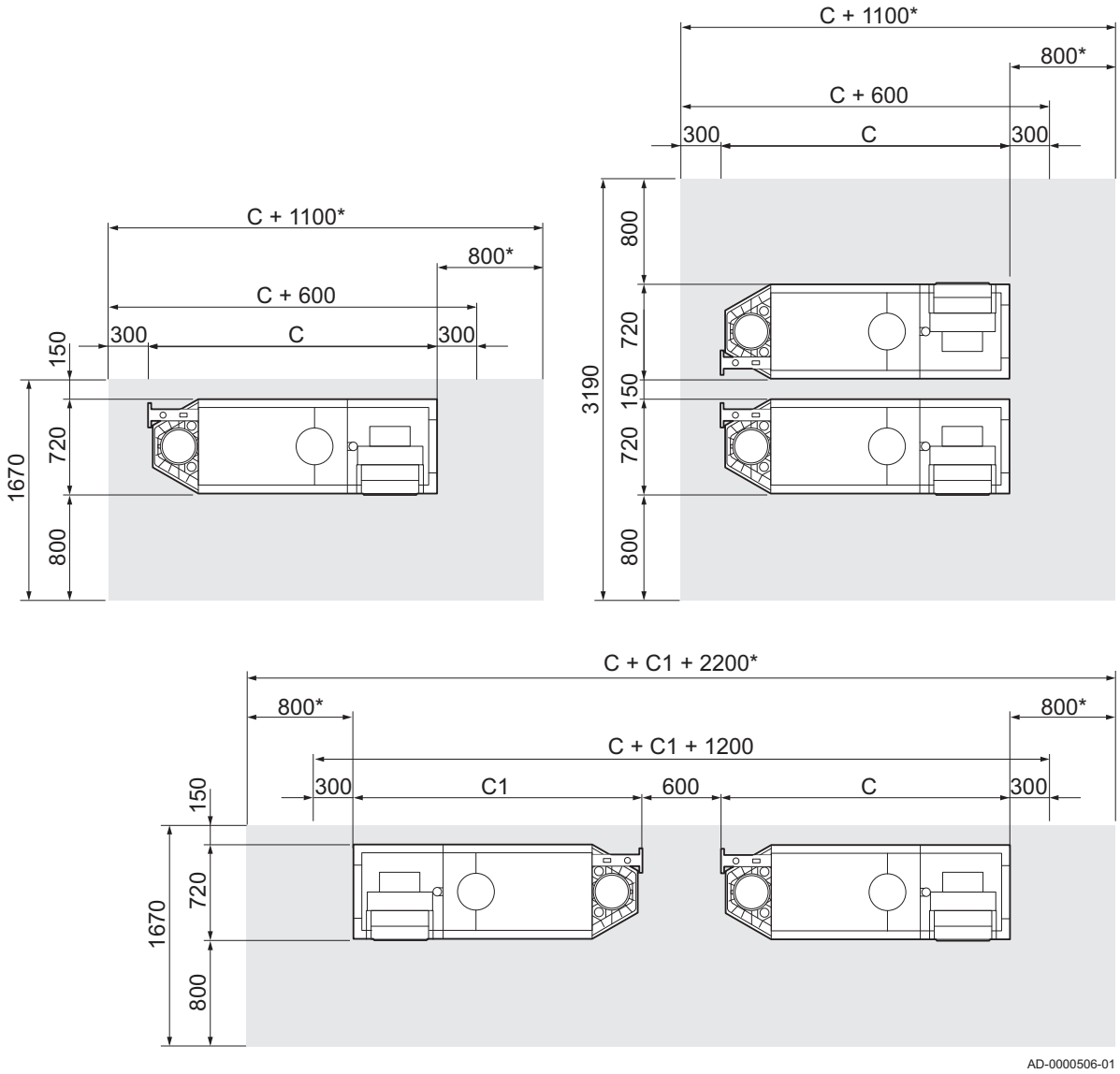
The adjustment bolts must be used to make the boiler level and to raise the wheels off the floor. Turn the adjustment bolts outwards as soon as the boiler is placed in the correct position. The figure shows the support surface of the boiler (this is the position of the adjustment bolts).

Tab.14 Dimensions A (mm)

| Gas 310 ECO PRO | A (mm) |
|---|---|
| 285 | 723 |
| 355 | 723 |
| 430 | 723 |
| 500 | 1032 |
| 575 | 1032 |
| 650 | 1032 |

Fig.9 Clearance required




*** =** Clearance required if this is the operating side.

For the dimensions of C/C1:

**See**
Boiler type Gas 310 ECO PRO, page 15

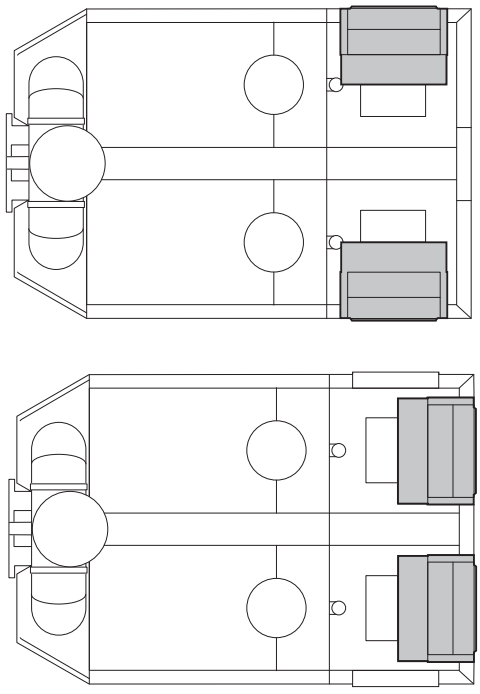
### 5.2.3 Installing the boiler Gas 610 ECO PRO

- Use the guidelines and the required installation space as a basis for determining the correct place to install the boiler.
- When determining the correct installation area, take account of the permitted position of the flue gas outlet and/or air supply outlet.
- Ensure that there is sufficient space around the boiler for good access and ease of maintenance.
- A technical clearance of at least 80 cm is required at the front (service side) of the boiler. However, we recommend that the clearance is at least 100 cm. Above the boiler, we recommend a clearance of at least 40 cm (when using a dirt trap, the clearance must be at least 65 cm). A minimum of 30 cm is required on the side of the flue gas outlet, and a minimum of 30 cm is also required on the other side (or 80 cm, if this is operating side).

**Danger**
It is forbidden to store, even temporarily, combustible products and substances in or near the boiler.

**Caution**
- The boiler must be installed in a frost-free area.
- An earthed electrical connection must be available close to the boiler.
- A connection to the sewer must be present for the condensate drain close to the boiler.

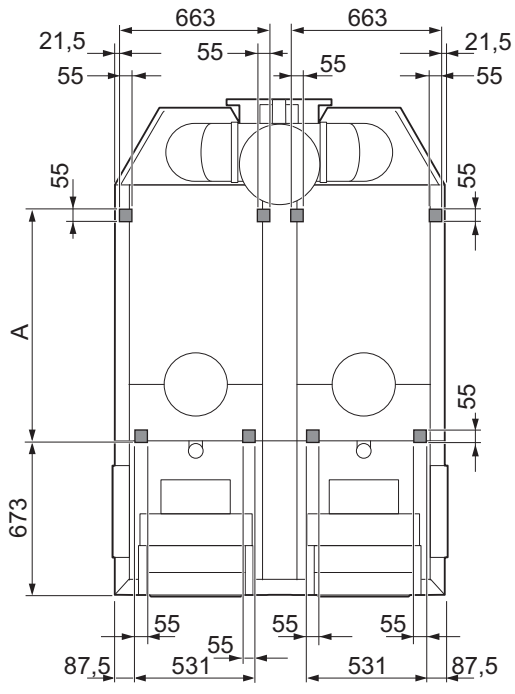
Fig.10 Position of the control panel



AD-0000514-01

The boiler is not available with a choice between 'left-hand' and 'right-hand' versions. The control panel is on the front as standard, but can easily be rotated so that it is on the short side.

Fig.11 Position of the adjustment bolts



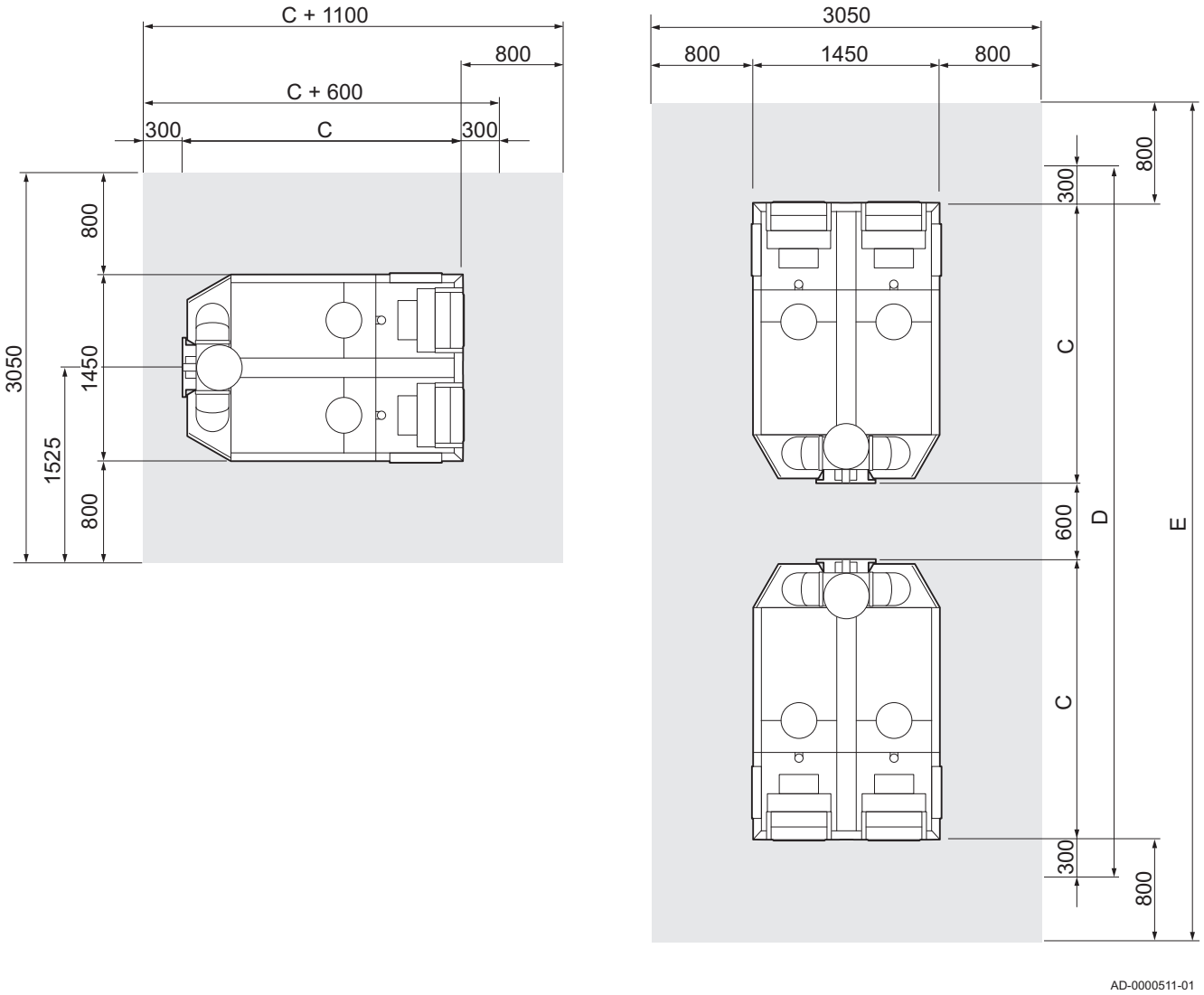

AD-0000510-01

The adjustment bolts must be used to make the boiler level and to raise the wheels off the floor. Turn the adjustment bolts outwards as soon as the boiler is placed in the correct position. The figure shows the support surface of the boiler (this is the position of the adjustment bolts).

Tab.15 Dimensions A (mm)

| Gas 610 ECO PRO | A (mm) |
|---|---|
| 570 | 723 |
| 710 | 723 |
| 860 | 723 |
| 1000 | 1032 |
| 1150 | 1032 |
| 1300 | 1032 |

Fig.12 Clearance required



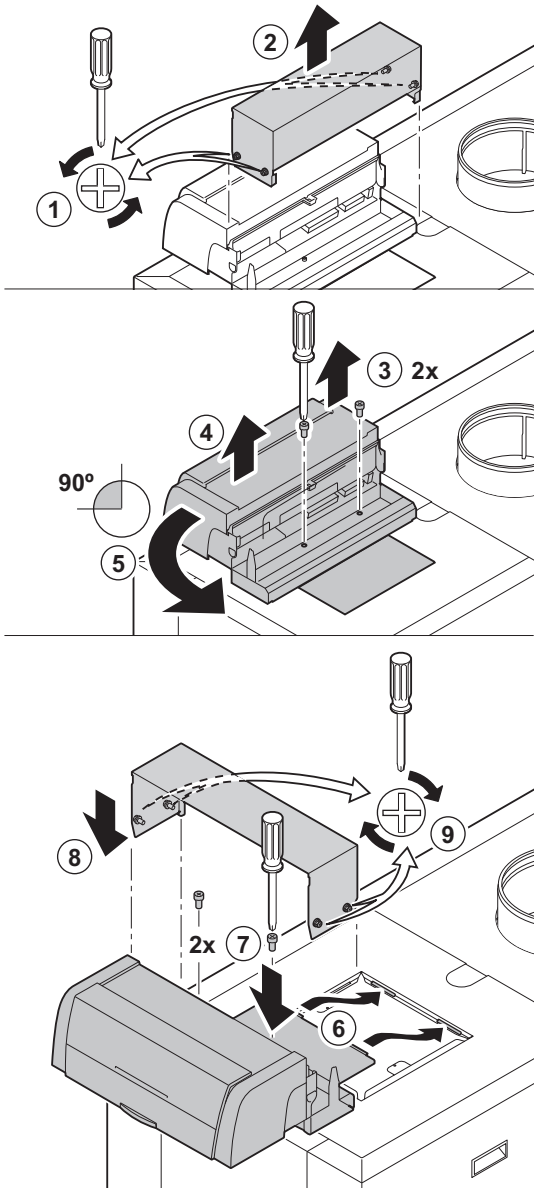

For the dimensions of C:

**See**
Boiler type Gas 610 ECO PRO, page 16

### 5.2.4 Rotating the control panel

The control panel is on the front as standard, but can easily be rotated so that it is on the short side.

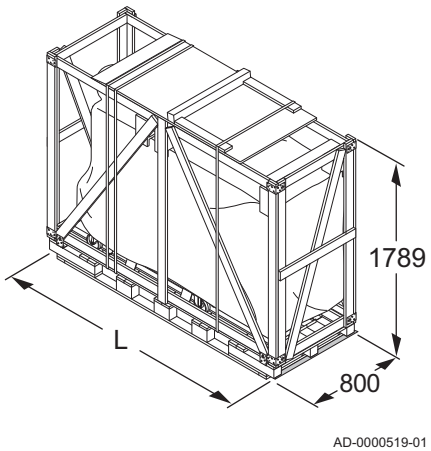
Fig.13 Rotating the control panel




1. Unscrew the 4 lateral retaining screws in the control panel.
2. Remove the protective cover.
3. Unscrew the 2 bottom plate screws.
4. Lift up the control panel with the bottom plate.
5. Turn the control panel and the bottom plate into position on the short side.
6. Slide the lips of the bottom plate into the appropriate slots.
7. Tighten the 2 bottom plate screws.
8. Replace the protective cover.
9. Tighten the 4 lateral retaining screws again.

## 5.3 Transport

Fig.14 Boiler package




Tab.16 Boiler package dimensions

| Gas 310 ECO PRO | L (mm) |
|---|---|
| 285 | 1920 |
| 355 | 1920 |
| 430 | 1920 |
| 500 | 2230 |
| 575 | 2230 |
| 650 | 2230 |

**Note**
For work on the Gas 610 ECO PRO boilers: The features and instructions described apply to each boiler module.

The boiler is supplied fully assembled on a pallet. See the diagram and table for the dimensions. The base of the package is a pallet 80 cm wide. This means that it can be transported with a pallet truck or using four-wheel transport boards. Without the packaging, the boiler is 720 mm wide,

(without 700 mm casing), meaning that it will fit through all standard doorways. The boiler has wheels so that, once the packaging has been removed, it can easily be moved around.

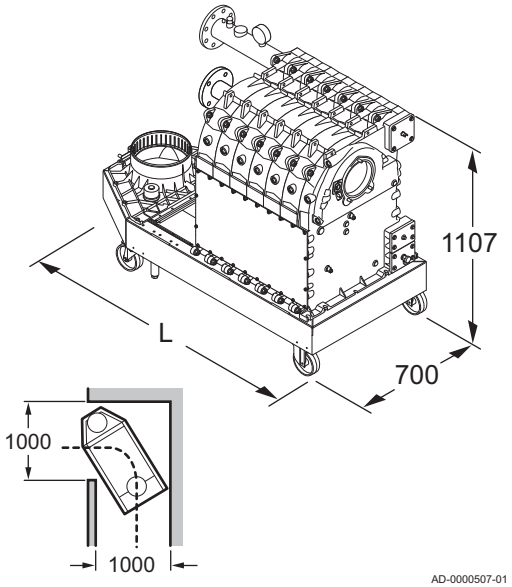
**Caution**
The wheels are designed for transport purposes only and not for use when the boiler is in its final position.

If required for internal transport, the boiler can be dismantled into smaller parts for transport. The boiler can be stripped of:

- Casing panels
- Gas/air components
- The frame section on the control panel side

See drawing and table for the dimensions and weight of the largest remaining transport element (frame element with heat exchanger and water connections).

Fig.15 Transport element




Tab.17 Boiler dimensions and weight

| Gas 310 ECO PRO | L (mm) | Weight (kg) |
|---|---|---|
| 285 | 1160 | 249 |
| 355 | 1160 | 283 |
| 430 | 1160 | 317 |
| 500 | 1469 | 356 |
| 575 | 1469 | 390 |
| 650 | 1469 | 424 |

**See**
Refer to the installation manual supplied for information on how to install the boiler parts.

# 6 Installation

## 6.1 General

**Warning**
The boiler must be installed by a qualified installer in accordance with local and national regulations.

## 6.2 Water connections

### 6.2.1 Rinsing the system

The installation must be cleaned and flushed in accordance with BS 7593 (2006).

Before a new CH boiler can be connected to an existing or new installation, the entire installation must be thoroughly cleaned and flushed. This step is absolutely crucial. The flushing helps to remove residue from the installation process (weld slag, fixing products etc.) and accumulations of dirt (silt, mud etc.)

**Note**
Flush the CH installation with a volume of water equivalent to at least three times the volume of the CH installation. Flush the DHW pipes with at least 20 times the volume of the pipes.

**Note**
Due to the presence of an aluminium heat exchanger, suitable chemicals and the correct use of these chemicals should be discussed with specialist water treatment companies.

### 6.2.2 Connecting the heating circuit

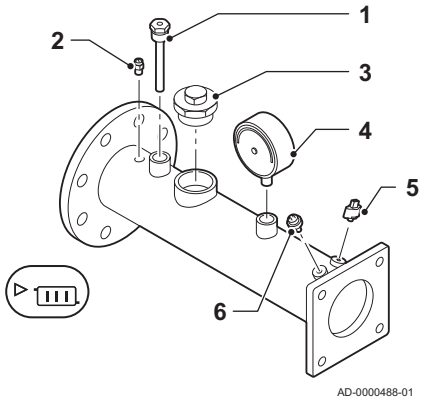
**Note**
For Gas 610 ECO PRO: the properties described and the instructions apply to each boiler module.

1. Remove the dust caps from the CH flow connection ▸ and CH return connection ▸.
2. Fit the outlet pipe for CH water to the CH flow ▸.
3. Fit the inlet pipe for CH water to the CH return ▸.
4. Connect a safety valve to the boiler's flow connection.
5. Connect the pump to the boiler's return connection.

Always connect the boiler in a way that will guarantee the water flow through the unit during operation. When the boiler is used in a system with two return pipes, the return pipe must be used as a cold return. The second return pipe (accessory) is then used as a hot return. Contact us for more information.

The flow pipe is fitted with the following components:

Fig.16 Flow pipe




1 Immersion tube for a temperature sensor for an external control (½").
2 Air vent (⅛").
3 Safety valve connection (1½").
4 Pressure gauge (½").
5 Flow sensor (M6).
6 High-limit thermostat (M4).

**Caution**
If using synthetic pipes, follow the manufacturer's (connection) instructions.

### 6.2.3 Connecting the condensate discharge pipe

**Note**
For Gas 610 ECO PRO: the properties described and the instructions apply to each boiler module.

Discharge the condensed water directly into the drain using a siphon:

1. Fit a plastic drain pipe of Ø 32 mm or larger to the siphon, terminating in the drain.

**Caution**
- Use only plastic material for the discharge pipe due to the acidity (pH 2 to 5) of the condensate.
- Do not make a fixed connection in order to prevent an overpressure in the siphon.

2. Fit a stench-trap or siphon in the drain pipe.

**Caution**
- Never seal the condensate drain.
- The drain pipe must slope down at least 5 - 10 mm per metre, the maximum horizontal length is 5 metres.
- Condensed water must not be discharged into a gutter.

## 6.3 Gas connection

**Note**
For Gas 610 ECO PRO: the properties described and the instructions apply to each boiler module.

**Warning**
- Before starting work on the gas pipes, turn off the main gas tap.
- Before installing, check that the gas meter has sufficient capacity. Take into account the consumption of all appliances.
- Notify the local energy company if the gas meter has insufficient capacity.

1. Remove the dust cap on the gas connection GAS/GAZ.
2. Fit the gas supply pipe to the gas supply GAS/GAZ.
3. Also fit a gas isolation valve in this pipe, near the boiler.

**Caution**
- Remove dirt and dust from the gas pipe.
- Always perform welding work at a sufficient distance from the boiler.
- The boiler is fitted with a gas filter as standard.

## 6.4 Air supply/flue gas connections

The boiler is suitable for the following types of flue gas connections:

**See**
Certifications, page 10.

Follow applicable local guidelines when connecting the flue gas discharge and air supply pipes to the boiler. The diameters of the pipes must be defined in accordance with the standards in force in your country. The total resistance of the flue gas outlet and air inlet must not exceed the maximum acceptable resistance.

**See**
To determine the maximum length of the air pipes/flue gas pipes: Length of the air and flue gas pipes, page 32.

**Note**
- With room-sealed operation, make sure the dirt trap in the boiler air supply remains accessible. For example, fit a T piece with an inspection trap in the air supply pipe directly above the boiler.
- With a flue gas connection of two or more Gas 310 ECO PRO boilers, certain fan speeds need to be changed. Change the values of relevant parameters for each boiler in the flue gas connection. Set them to the values as specified in the parameter table for the Gas 610 ECO PRO boiler.

**See**
Manual for the control panel.

### 6.4.1 Classification

This classification is specified in more detail in the table in accordance with CE.

Tab.18 Types of flue gas connections

| Type | Version | Description |
|---|---|---|
| B23<br>B23P(1) | Open | • Without down-draught diverter.<br>• Flue gas discharge via the roof.<br>• Air from the installation area. |
| B33 | Open | • Without down-draught diverter.<br>• Joint flue gas discharge via the roof.<br>• Flue gas discharge rinsed with air, air from the installation area (special construction). |
| C13 | Closed | • Discharge in the outside wall.<br>• Inlet opening for the air supply is in the same pressure zone as the discharge (e.g. a combined outside wall feed-through). |
| C33 | Closed | • Flue gas discharge via the roof.<br>• Inlet opening for the air supply is in the same pressure zone as the discharge (e.g. a concentric roof feed-through). |
| C43(2) | Closed/cascade | • Joint air supply and flue gas discharge duct (CLV system):<br>- Concentric.<br>- Eccentric: air supply from the shaft.<br>• Cascade overpressure |
| C53 | Closed | • Closed unit.<br>• Separate air supply duct.<br>• Separate flue gas discharge duct.<br>• Discharging into various pressure areas. |
| C63 | Closed | • This type of unit is supplied by the manufacturer without a supply and discharge system. |
| C83(3) | Closed | • The appliance can be connected to a semi-CLV system (with common flue gas outlet). |

| Type | Version | Description |
|---|---|---|
| C93(4) | Closed | • Air supply and flue gas discharge duct in shaft or ducted:<br>- Concentric.<br>- Eccentric: air supply from the shaft.<br>- Flue gas discharge via the roof.<br>- Inlet opening for the air supply is in the same pressure zone as the discharge. |

(1) Also pressure class P1
(2) EN 15502-2-1: 0.5 mbar suction due to depression
(3) 4 mbar depression can occur
(4) See table for minimum dimensions of shaft or duct

### 6.4.2 Outlets

Drain systems (roof feed-through and outside wall feed-through) must be supplied by the following manufacturers:

- Centrotherm
- Cox Geelen
- Muelink & Grol
- Natalini
- Poujoulat
- Ubbink

**Note**
Where regulations stipulate that a wire grille must be fitted, use a suitable grille made from stainless steel. There must be a minimum distance of 50 mm between each part of the outlet and the grille.

Boiler-specific roof and outside wall feed-through kits are also available.

**Note**
Contact us for more information.

### 6.4.3 Length of the air and flue gas pipes

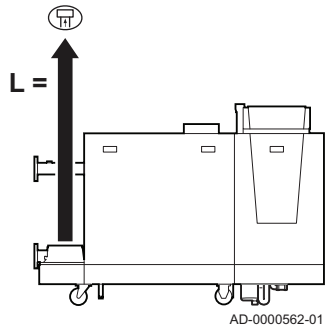
**Note**
- When using bends, the maximum chimney length (L) must be shortened according to the reduction table.
- The boiler is also suitable for longer chimney lengths and diameters other than those specified in the tables. Contact us for more information.

#### ■ Room-ventilated version (B23, B23P)

With a room-ventilated version, the air supply opening stays open; only the flue gas outlet opening is connected. This will ensure that the boiler obtains the necessary combustion air directly from the installation area. Use adapters when using air supply and flue gas outlet pipes with diameters other than 250 mm.

**Caution**
- The air supply opening must stay open.
- The installation area must be equipped with the necessary air supply openings. These openings must not be obstructed or shut off.
- If the boiler, in room-ventilated operation, has been set up in a (very) dusty room, use the air supply filter (accessory).
- Use of the dirt trap is compulsory when the boiler is exposed to building dust.

Fig.17 Room-ventilated version Gas 310 ECO PRO

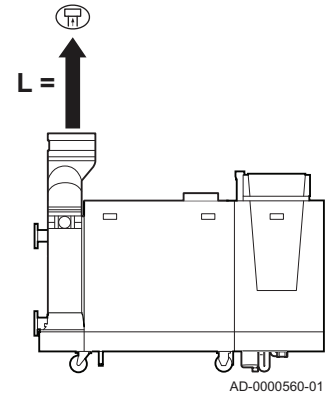



Flue gas outlet

Tab.19 Maximum chimney length for the open flue version

| Gas 310 ECO PRO | Maximum length L (in metres)(1) | | | |
|---|---|---|---|---|
| | Ø 150 mm | Ø 180 mm | Ø 200 mm | Ø 250 mm |
| 285 | 20 | 50 | 50 | 50 |
| 355 | 11 | 30 | 50 | 50 |
| 430 | 8 | 22 | 39 | 50 |
| 500 | 7 | 18 | 32 | 50 |
| 575 | 5 | 13 | 24 | 50 |
| 650 | 5 | 12 | 21 | 50 |
| (1) Calculated with rigid tube and discharge without cover ( "free" opening) | | | | |

Fig.18 Room-ventilated version Gas 610 ECO PRO




Flue gas outlet

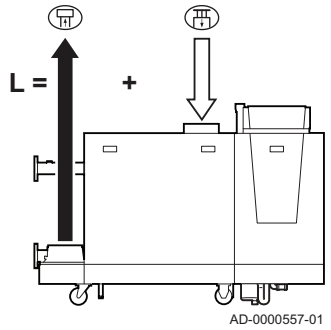
Tab.20 Maximum chimney length for the open flue version

| Gas 610 ECO PRO | Maximum length L (in metres)(1) | | |
|---|---|---|---|
| | Ø 250 mm | Ø 300 mm | Ø 350 mm |
| 570 | 50 | 50 | 50 |
| 710 | 31 | 50 | 50 |
| 860 | 20 | 50 | 50 |
| 1000 | 11 | 39 | 50 |
| 1150 | 5 | 26 | 50 |
| 1300 | 3 | 19 | 50 |
| (1) Calculated with rigid tube and discharge without cover ( "free" opening) | | | |

## ■ Room-sealed version (C33, C63, C93)

With a room-sealed version, both the flue gas outlet and the air supply openings are connected (in parallel). Use adapters when using air supply and flue gas outlet pipes with diameters other than 250 mm.

Fig.19 Room-sealed version Gas 310 ECO PRO

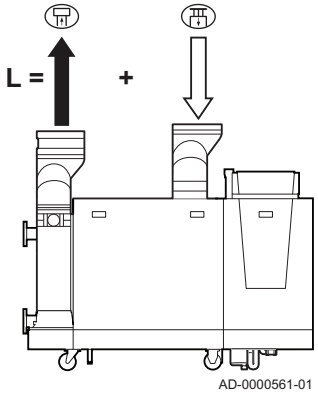



Flue gas outlet
Air supply

Tab.21 Maximum chimney length for room-sealed operation

| Gas 310 ECO PRO | Maximum length L (in metres)(1) | | |
|---|---|---|---|
| | Ø 200 mm | Ø 250 mm | Ø 300 mm |
| 285 | 42 | 50 | 50 |
| 355 | 21 | 50 | 50 |
| 430 | 13 | 50 | 50 |
| 500 | 10 | 50 | 50 |
| 575 | 5 | 34 | 50 |
| 650 | 4 | 30 | 50 |
| (1) Calculated with rigid tube and discharge without cover ( "free" opening) | | | |

Fig.20 Room-sealed version Gas 610 ECO PRO




Flue gas outlet
Air supply

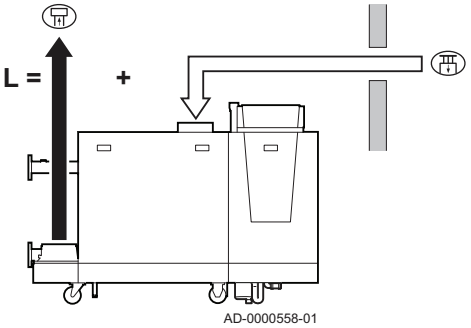
Tab.22 Maximum chimney length for room-sealed operation

| Gas 610 ECO PRO | Maximum length L (in metres)(1) | | |
|---|---|---|---|
| | Ø 300 mm | Ø 350 mm | Ø 400 mm |
| 570 | 50 | 50 | 50 |
| 710 | 43 | 50 | 50 |
| 860 | 26 | 50 | 50 |
| 1000 | 13 | 35 | 50 |
| 1150 | 5 | 16 | 24 |
| 1300 | — | 10 | 12 |
| (1) Calculated with rigid tube and parallel 350 mm top conduit (accessory) | | | |

## ■ Connection in different pressure zones (C53, C83)

Combustion air supply and flue gas discharge are possible in different pressure areas and semi-CLV systems, with the exception of the coastal area. The maximum permitted height difference between the combustion air supply and the flue gas outlet is 36 m.

Fig.21 Different pressure zones Gas 310 ECO PRO

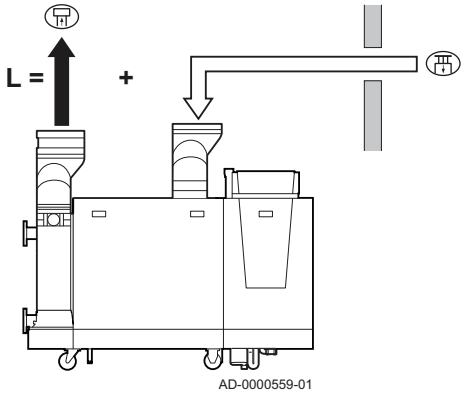



Flue gas outlet connection
Air supply connection

Tab.23 Maximum chimney length in the various pressure zones

| Gas 310 ECO PRO | Maximum length L (in metres)(1) |
|---|---|
| | Ø 250 mm |
| 285 | 50 |
| 355 | 50 |
| 430 | 50 |
| 500 | 50 |
| 575 | 49 |
| 650 | 40 |
| (1) Calculated with rigid tube and 90° bend and discharge without cover ( "free" opening) | |

Fig.22 Different pressure zones Gas 610 ECO PRO




Flue gas outlet connection
Air supply connection

Tab.24 Maximum chimney length in the various pressure zones

| Gas 610 ECO PRO | Maximum length L (in metres)(1) | |
|---|---|---|
| | Ø 350 mm | Ø 400 mm |
| 570 | 50 | 50 |
| 710 | 50 | 50 |
| 860 | 50 | 50 |
| 1000 | 33 | 50 |
| 1150 | — | 22 |
| 1300 | — | — |
| (1) Calculated with rigid tube and 90° bend and discharge without cover ( "free" opening) | | |

### ■ Reduction table

Tab.25 Pipe reduction for each element used

| Diameter | Pipe reduction (in metres) | |
|---|---|---|
| | 45° bend | 90° bend |
| 150 mm | 1.2 | 2.1 |
| 180 mm | 1.4 | 2.5 |
| 200 mm | 1.6 | 2.8 |
| 250 mm | 2.0 | 3.5 |
| 300 mm | 2.4 | 4.2 |
| 350 mm | 2.8 | 4.9 |
| 400 mm | 3.2 | 5.6 |

## 6.4.4 Additional guidelines

- For installing the flue gas outlet and air supply materials, refer to the instructions of the manufacturer of the relevant material. If the flue gas outlet and air supply materials are not installed in accordance with the instructions (e.g. not leakproof, not bracketed), this can result in dangerous situations and/or physical injury. After installation, check at least all flue gas outlet and air supply parts for tightness.
- Direct connection of the flue gas outlet to structural ducts is not permitted because of condensation.
- Always clean shafts thoroughly when using lining pipes and/or an air supply connection.
- It must be possible to inspect the lining duct.
- If condensate from a plastic or stainless steel pipe section can flow back to an aluminium part in the flue gas outlet, this condensate must be discharged via a collector before it reaches the aluminium.
- With longer lengths of aluminium flue gas outlet pipes, relatively large quantities of corrosion products flowing back out of the outlet pipes together with the condensate must be taken into account the first time. Clean the siphon of the appliance regularly or install an extra condensate collector above the unit.
- Make sure that the flue gas outlet pipe towards the boiler has a sufficient gradient (at least 50 mm per metre) and that there is a sufficient condensate collector and discharge (at least 1 m before the outlet of the boiler). The bends used must be larger than 90° to guarantee the gradient and a good seal on the lip rings.

**Note**
Contact us for more information.

## 6.4.5 Connecting the flue gas outlet

The boiler is equipped with a mechanical flue gas non-return valve as standard. This prevents flue gases from flowing back into the boiler when it is not in operation (cascade settings for example).

Proceed as follows to connect the flue gas outlet:

1. Fit the flue gas outlet pipe to the boiler.
2. Fit the successive flue gas outlet pipes seamlessly together.

**Caution**
- The pipes must be flue gas-tight and corrosion-resistant.
- The materials used must comply with the prevailing regulations and standards.
- The flue gas outlet pipe must be smooth and deburred.
- Connect the pipes so that they are stress-free.
- The pipes must not rest on the boiler or flue gas adapter.
- Fit the horizontal parts sloping down towards the boiler, with a slope of 50 mm per metre.
- Maximum bracket spacing for vertical pipes is 2 m.
- Maximum tilt of vertical pipes is 20 mm/m.
- Use a bracket at each connection for horizontal pipes.

### 6.4.6 Air supply connection

1. Fit the air supply pipe to the boiler.
2. Fit the successive air supply pipes seamlessly together.

**Caution**
- The pipes must be flue gas-tight and corrosion-resistant.
- The air supply pipe must be smooth and deburred.
- Connect the pipes so that they are stress-free.
- Maximum bracket spacing for vertical pipes is 2 m.
- Maximum tilt of vertical pipes is 20 mm/m.
- The pipes must not rest on the boiler or air supply adapter.
- Fit the horizontal parts sloping down towards the air supply outlet.
- Use a bracket at each connection for horizontal pipes.

Tab.26 Air supply pipework materials

| Version | Material |
|---|---|
| Single-wall, rigid | Aluminium/plastic/stainless steel(1) |
| Flexible | |

(1) The materials used must comply with the applicable regulations and standards

## 6.5 Electrical connections

### 6.5.1 General

**Note**
For connections for the Gas 610 ECO PRO boiler: the properties described and the instructions apply to each boiler module.

### 6.5.2 Recommendations

**Warning**
- Electrical connections must always be made with the power supply disconnected and only by qualified installers.
- The boiler is completely pre-wired. Never change the internal connections of the control panel.
- Make sure you establish an earth connection before connecting the electricity.

Establish the electrical connections in accordance with:

- The instructions of the current standards.
- The instructions of the wiring diagrams supplied with the boiler.
- The recommendations in this manual.

**Caution**
Separate the sensor cables from the 230 V cables.

### 6.5.3 Control unit

The table gives important connection values for the control unit.

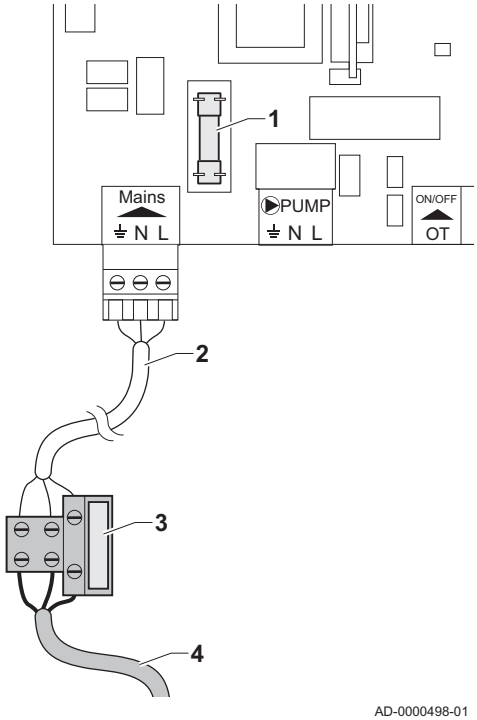
Tab.27 Connection values for control unit

| | |
|---|---|
| Supply voltage | 230 VAC/50 Hz |
| Main fuse value F2 (230 VAC) | 10 AT |
| Fuse value F1 (230 VAC) | 2 AT |
| Fan | 230 VAC |

**Danger of electric shock**
The following components of the boiler are connected to a 230 V power supply:
- (Electrical connection of) circulating pump on connector
- (Electrical connection of) combined gas valve unit
- (Electrical connection of) fan
- The majority of components in the control unit
- Ignition transformer
- (Connection of) supply cable

The boiler has phase detection. The boiler is completely pre-wired. The boiler is suitable for a 230 VAC/50 Hz supply with live/neutral/earth. Other connection values are only acceptable if an isolating transformer is installed. Connect the wires of the mains lead to the correct terminal block. This can be found on the left underneath the **MAINS** connector. (The mains lead is not supplied).

Fig.23 Mains connection




1 Fuse (F1)
2 Pre-wired in the boiler (PW)
3 Main fuse (F2)
4 Three-wired mains lead (M)

**Caution**
- Always order a replacement mains lead from Remeha. The power supply cable should only be replaced by Remeha , or by an installer certified by Remeha .
- In the case of a fixed connection of the mains lead, you must always install a main bipolar switch with a contact gap of at least 3 mm.
- When connecting the mains lead to the plug, the earth wire must be longer than the live wires.
- The plug of the boiler must always be accessible.

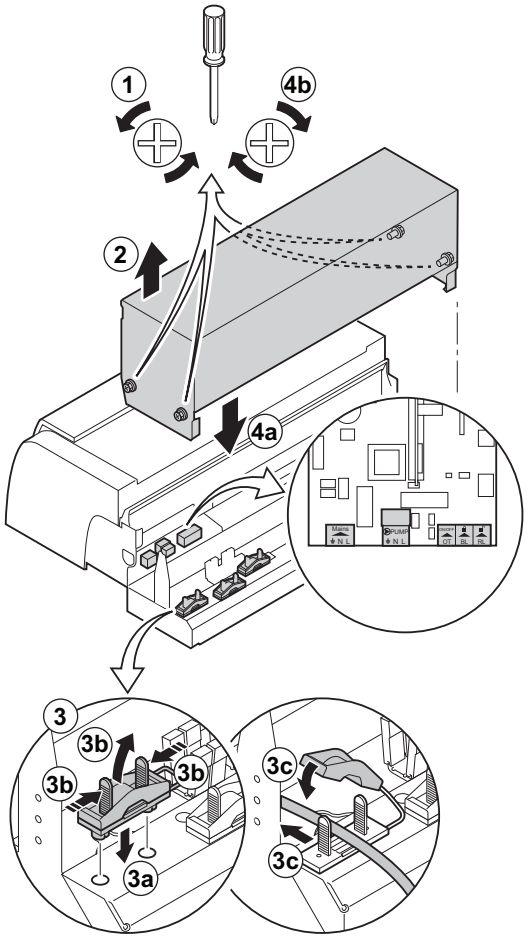
**Note**
The boiler has a unique boiler code. This, together with other data, including the boiler type, counter readings, etc. is stored in what is known as a **PSU** that belongs with the boiler. If the control unit is replaced, the counter readings remain stored in it.

The boiler has several control, protection and regulation connection options. The heat output of the boiler can be controlled as follows:

- Modulating control: the output varies between the minimum and maximum value on the basis of the value defined by the controller.
- Analogue control: where the heat output or the temperature is controlled by a 0-10 V signal.
- On/off control: where the heat output modulates between the minimum and maximum value on the basis of the flow temperature set in the boiler.

### 6.5.4 Access to the connectors

Fig.24 Access to the connectors




AD-0000489-01

The **SU** protection PCB, which protects the boiler, is connected to the standard **PCU-06** PCB. Various thermostats and regulators can be connected to the standard PCB.

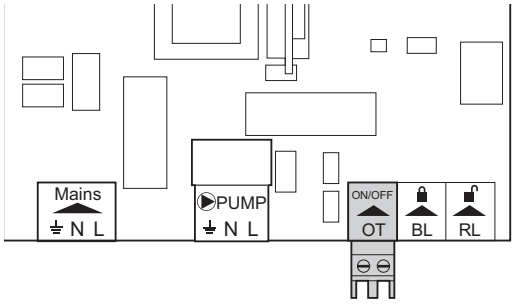
**Note**
A clearance of 20 cm is required above the control panel to allow the front cover to open fully. Bear this in mind when installing cable ducts.

1. Unscrew the 4 lateral retaining screws in the control panel.
2. Remove the protective cover.
   The detachable screw connectors are now accessible.
3. Secure the cable(s) using the traction clips (the traction clips are supplied loose).
4. Screw the strain relief clamps securely into position and close the control panel.

### 6.5.5 Connection options for the standard PCB

#### ■ Connecting the on/off thermostat

Fig.25 Connecting the on/off thermostat



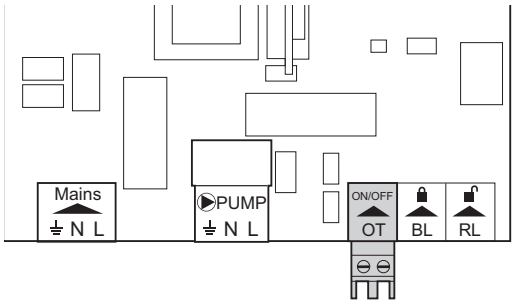

AD-0000494-01

The boiler is suitable for connection to a 2-wire on/off thermostat.

1. Install the thermostat in a reference room.
2. Connect the two-wire cable of the thermostat to the **On/Off OT** terminals of the connector. It does not matter which wire is connected to which cable clamp.

## Connecting the modulating thermostat

Fig.26 Connecting the modulating thermostat



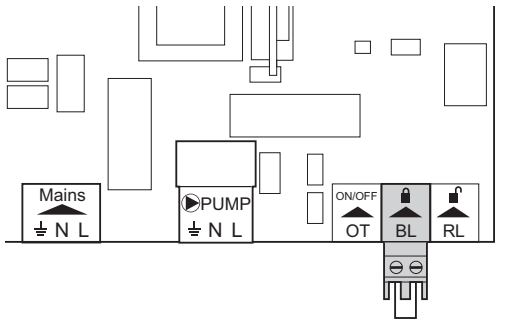

AD-0000494-01

The boiler is fitted with an **OpenTherm** connection as standard. As a result, modulating **OpenTherm** thermostats can be connected without any further adjustments.

1. In the case of a room thermostat: install the thermostat in a reference room.
2. Connect the two-wire cable of the thermostat to the **On/Off OT** terminals of the connector. It does not matter which wire is connected to which cable clamp.

## Blocking input

Fig.27 Blocking input




AD-0000495-01

The boiler has a blocking input (normally closed contact). If this contact is opened, the boiler will be blocked or locked out. This input can be used for example in combination with the flue gas thermostat (accessory). This input relates to the **BL** terminals of the connector.

**Warning**
Only suitable for potential-free contacts.

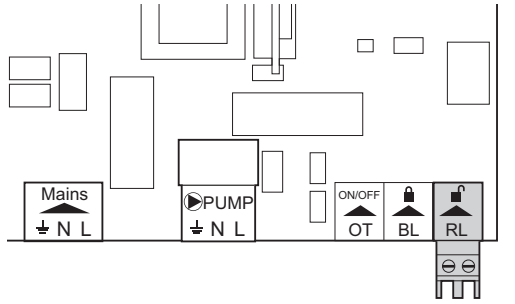
**Note**
First remove the bridge if this input is used.

A parameter setting can be used to change the function of the input.

**See**
Manual for the control panel.

## Release input

Fig.28 Release input




AD-0000496-01

The boiler has a release input (normally open contact). If this contact is closed when there is a heat demand, the burner will be blocked after a waiting time. This input can be used, for example, in combination with the limit switches on flue gas dampers, hydraulic shutter valves, etc. This input relates to the **RL** terminals of the connector.

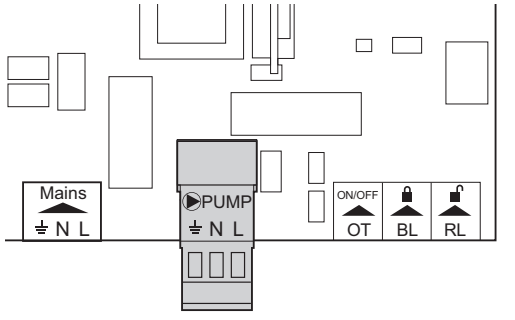
**Warning**
Only suitable for potential-free contacts.

A parameter setting can be used to change the input waiting time.

**See**
Manual for the control panel.

## Connecting the circulating pump

Fig.29 Connecting the pump




AD-0000497-01

The boiler is supplied without a pump. An external CH pump may be connected:

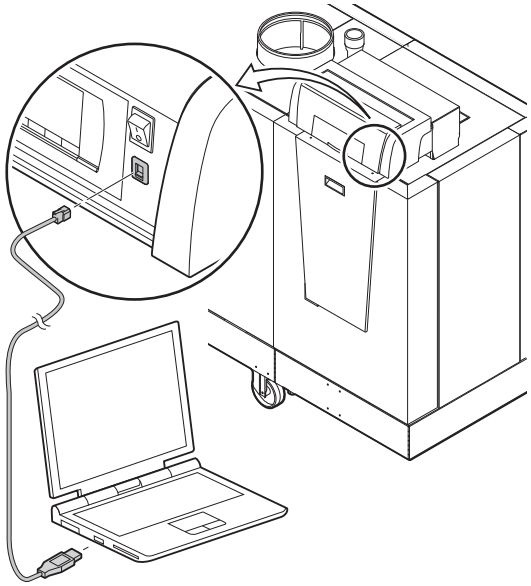
1. Connect an external CH pump to the **Pump** terminals of the connector.
   Maximum power consumption may be 300 VA.

For more information about controlling the modulating pump:

**See**
SCU-S05 PCB, page 41

## ■ Connecting a PC/laptop

Fig.30 Connecting a PC/laptop

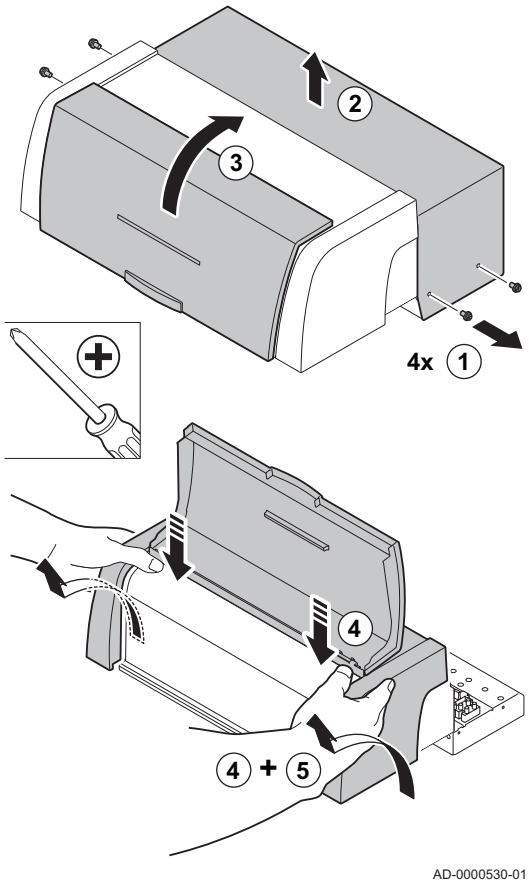


AD-0000503-01

A PC or laptop can be connected to the **RS232** input using a USB cable. Using the **Recom** PC/laptop service software, you can enter, change and read out various boiler settings.

### 6.5.6 PCBs

Fig.31 Open housing for PCBs



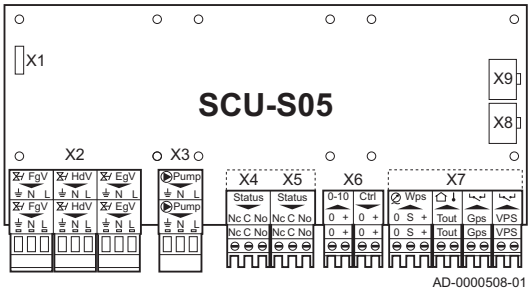

AD-0000530-01

The PCBs are positioned in the PCB housing behind the control panel.

1. Unscrew the 4 lateral retaining screws in the control panel.
2. Remove the protective cover.
3. Open the front cover.
4. Use both thumbs to press the top of the control panel downwards a little.
5. While maintaining some of the pressure you are applying to the top of the control panel, use both hands to tip the casing forwards and upwards.

## ■ SCU-S05 PCB

Fig.32 SCU-S05 PCB



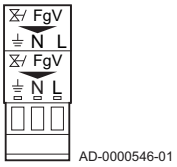

The boiler is fitted with the extended SCU-S05 PCB as standard.

**Note**
On removing this PCB, the boiler will display an error code. To prevent this error, an auto-detect must be carried out after removing this PCB.

**See**
Manual for the control panel.

### – Connecting the flue damper (FgV)

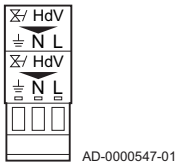
Fig.33 FgV connection




Not applicable.

### – Connecting the hydraulic valve (HdV)

Fig.34 Connecting the HdV



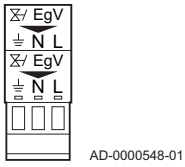

In a cascade configuration, a hydraulic valve prevents heat loss in the system when the boiler is not running.

1. Connect the hydraulic valve to the **HdV** terminals of terminal strip.
2. Change the hydraulic valve running time with a parameter setting.

**See**
Manual for the control panel.

### – Connecting the external gas valve (EgV)

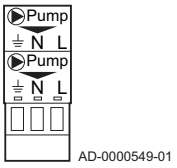
Fig.35 EgV connection




If there is a heat demand, an alternating voltage of 230 VAC, 1 A (maximum) becomes available at the **EgV** terminals of the connector to control an external gas valve.

### – Connecting a shunt pump

Fig.36 Connecting the pump

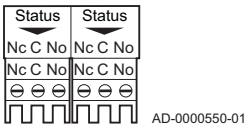



If required, a shunt pump may also be installed on the **Pump** terminals of the connector. Only an on/off pump can be controlled. The maximum power consumption is 300 VA. The pump is activated for certain blockages.

**See**
Manual for the control panel.

### – Operation signal and error signal (status)

Fig.37 Status of connections

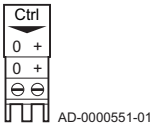



The choice of an alarm or operation signal can be set on connectors **X4** or **X5** using a parameter setting.

**See**
Manual for the control panel.

- If the boiler is operating, the operation signal can be switched via a potential-free contact (maximum 230 VAC, 1 A) on the **No** and **C** terminals of the connector.
- If the boiler is locked out, the alarm signal can be transmitted via a potential-free contact (maximum 230 VAC, 1 A) on the **Nc** and **C** terminals of the connector.

Fig.38 Ctrl connection




## – Analogue output (Ctrl)

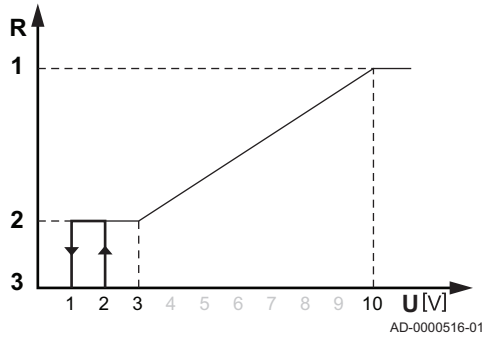
An outgoing 0 - 10 V signal can be used either to report the supplied heat output or the supplied temperature.

An outgoing 0 - 10 V signal can be used to adjust the speed of the system pump (possible only if the pump is suitable for this).

The function of the analogue output can be changed with a parameter setting.

**See**
Manual for the control panel.

Fig.39 Wilo pump



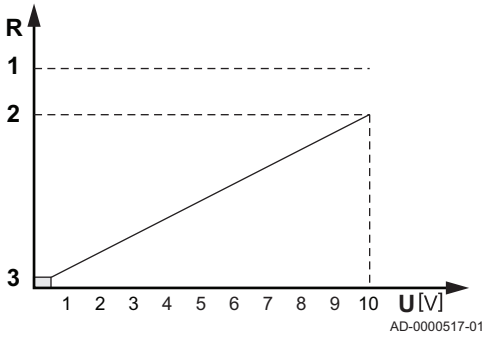

**Control of the 0-10 V Wilo system pump**

**1** Maximum pump speed
**2** Minimum pump speed
**3** The pump is off
**R** Pump speed
**U** Output signal (V)

Tab.28 Output signal

| Output signal (V) | Description |
|---|---|
| <1 | Pump off |
| 1 - 2 | Hysteresis |
| 2 - 3 | Pump on (minimum pump speed |
| 3 - 10 | Pomp modulating (linear) |

Fig.40 Grundfos pump




**Control of the 0-10 V Grundfos system pump**

**1** Maximum pump speed
**2** Nominal set-point
**3** Minimum pump speed
**R** Pump speed
**U** Output signal (V)

Tab.29 Output signal

| Output signal (V) | Description |
|---|---|
| < 0.5 | Pump on (minimum pump speed |
| > 0.5 | Pomp modulating (linear) |

**Control of the PWM system pump**
In this case, the 0 - 10 V signal controls the system pump linearly.

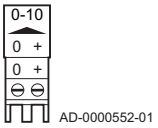
Tab.30 Message about the supplied temperature

| Output signal (V) | Temperature in (°C) | Description |
|---|---|---|
| 0.5 | - | Lock out |
| 1 - 10 | 10 - 100 | Supplied temperature |

Tab.31 Message about the supplied heat output

| Output signal (V) | Heat output (%) | Description |
|---|---|---|
| 0 | 0 | Boiler off |
| 0.5 | - | Lock out |
| 2.0 - 10(1) | 20 - 100 | Supplied heat output |
| (1) Dependent on the minimum modulation depth (set speeds, standard 20%) | | |

Fig.41 0 - 10 V connection




### – Analogue input (0 - 10 V)

A choice can be made with this control between control based on temperature or heat output. If this input is used for 0-10 V control, the OT communication from the boiler is ignored.

1. Connect the input signal to terminals **0–10** of the connector.

The function of the analogue input can be changed with a parameter setting.

**See**
Manual for the control panel.

Tab.32 Temperature-based control (°C)

| Jumper 2 | Input signal (V) | Temperature °C | Description |
|---|---|---|---|
| | 0–1.5 | 0–15 | Boiler off |
| | 1.5–1.8 | 15–18 | Hysteresis |
| | 1.8–10 | 18–100 | Desired temperature |

The 0–10 V signal controls the boiler supply temperature. This control modulates on the basis of flow temperature. The output varies between the minimum and maximum value on the basis of the flow temperature set point calculated by the controller.

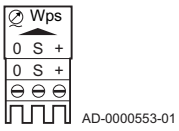
Tab.33 Control based on heat output

| Jumper 2 | Input signal (V) | Heat output (%) | Description |
|---|---|---|---|
| % | 0–2.0(1) | 0–20 | Boiler off |
| | 2.0–2.2(1) | 20–22 | Hysteresis |
| | 2.0–10(1) | 20–100 | Required output |
| (1) Dependent on the minimum modulation depth (set speeds, standard 20%) | | | |

The 0–10 V signal controls the boiler output. This control modulates on the basis of the heat output. The minimum output is linked to the boiler's modulation depth. The output varies between the minimum and maximum value on the basis of the value defined by the controller.

### – Connecting the hydraulic pressure sensor (Wps)

Fig.42 Wps connection



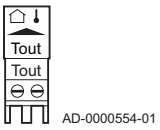

The hydraulic pressure sensor registers the water pressure and can shut the boiler down when the minimum water pressure is reached. To activate this blocking option, a minimum pressure must be set.

**See**
Manual for the control panel.

1. Connect the water pressure sensor to the **Wps** terminals of the terminal strip.
   - 0 = Earth or neutral of the power supply
   - S = Signal or output from the sensor
   - + = Supply voltage

### – Connecting an outside sensor

Fig.43 Connecting an outside sensor

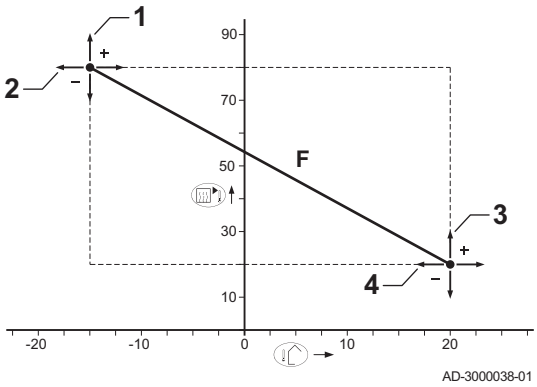



An outside sensor can be connected to the **Tout** terminals of the connector (accessory). In the event of an on/off thermostat, the boiler will regulate the temperature using the set point of the internal heating curve (**F**).

1. Connect the two-wire cable to the **Tout** terminals of the connector.

**Note**
An **OpenTherm** controller can also use this outside sensor. In that case, the desired internal heating curve must be set on the controller.

Fig.44 Heating curve




1 Flow temperature setting ($T_{set}$)
2 Heating curve set point (minimum outside temperature)
3 Heating curve set point (flow temperature)
4 Heating curve set point (maximum outside temperature)
F Heating curve

If an outside temperature sensor is connected, it is possible to adapt the internal heating curve. Various parameter settings can be used to change the internal heating curve.

**See**
Manual for the control panel.

## – Connecting the minimum gas pressure switch (Gps)

The minimum gas pressure switch blocks the boiler if the gas inlet pressure drops too low. Check the setting for the **Gps** minimum gas pressure switch (see table below).

Fig.45 Gps connection

Tab.34 Setting the minimum gas pressure switch

| Gas 310 ECO PRO | Minimum value (mbar) |
|---|---|
| 285 | 14 |
| 355 | 13 |
| 430 | 10 |
| 500 | 10 |
| 575 | 10 |
| 650 | 10 |

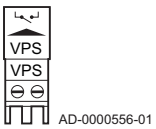
1. Connect the minimum gas pressure switch to the **Gps** terminals of the connector
2. Set the presence of the gas pressure switch using a parameter setting.

**See**
Manual for the control panel.

## – Connecting the gas leakage control (VPS)

The gas leakage control checks and controls the safety valves on the gas valve unit. The test takes place before the boiler starts up. In the event of a leak in the gas valve unit, the boiler will lock out. The pressure switch must be set at 50% of the supply pressure (see table below).

Fig.46 VPS connection




Tab.35 Setting the gas pressure switch

| Gas 310 ECO PRO | Gas inlet pressure (max.) (mbar) | Vps setting (max.) (mbar) |
|---|---|---|
| 285 | 30 | 15 |
| 355 | 30 | 15 |
| 430 | 100 | 40 |
| 500 | 100 | 40 |
| 575 | 100 | 40 |
| 650 | 30 | 15 |

1. Connect the gas leakage control to the **VPS** terminals of the terminal strip.
2. Set the presence of the gas leakage control using a parameter setting.

**See**
Manual for the control panel.

## 6.6 Filling the system

### 6.6.1 Water treatment

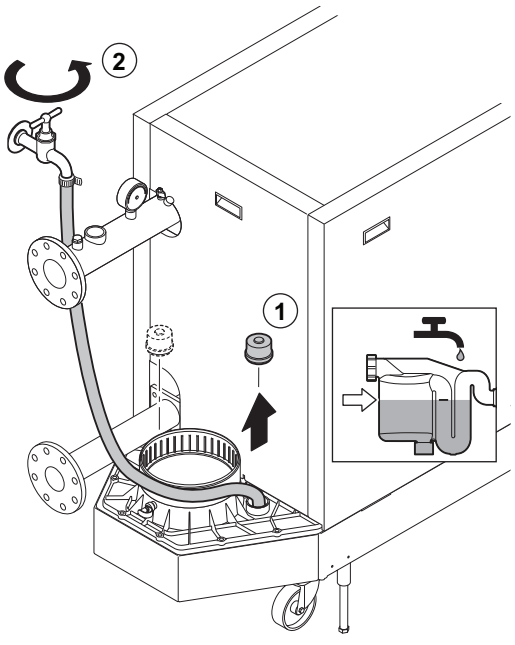
In many cases, the boiler and central heating system can be filled with normal tap water and water treatment will not be necessary.

**Warning**
Do not add chemical agents to the central heating water without consulting Remeha. For example: antifreeze, water softeners, pH-increasing or lowering agents, chemical additives and/or inhibitors. Such agents can cause errors in the boiler and damage to the heat exchanger.

**Note**
- For untreated water, the pH value of the water in the installation must be between 7 and 9 and for treated water between 7 and 8.5.
- The maximum hardness of the water in the installation must be between 0.5 and 20.0 °dH (dependent on the total heat output generated).
- More information is available in our **Water quality regulations**. Always adhere to the instructions in the aforementioned document.

### 6.6.2 Filling the siphon

Fig.47 Filling the siphon




1. Fill the siphon with water up to the mark using the condensate collector.

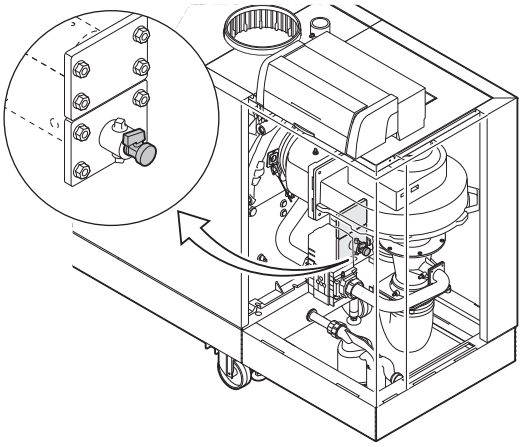
**Danger**
The siphon must always be sufficiently filled with water. This prevents flue gases from entering the room.

**Warning**
Put the sealing cap back on the condensate collector.

### 6.6.3 Filling the system

1. Disconnect the boiler.

Fig.48 Filling the system



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2. Fill the central heating system with clean tap water.

**Note**
The recommended water pressure is between 1.5 bar and 2 bar.

The boilers operate at an operating pressure between 0.8 bar and 7 bar.

3. Check the water-side connections for tightness.
4. Turn the boiler on.

**Note**
- If the water pressure is below 0.8, the symbol will appear (only if a hydraulic pressure sensor is connected (accessory)). If the water pressure is too low, top up the CH system.
- A filling and drain valve (½") is fitted on the front section as standard.

# 7 Commissioning

## 7.1 Checklist before commissioning

**Warning**
Do not put the boiler into operation if the type of gas supplied does not conform to the approved gas types.

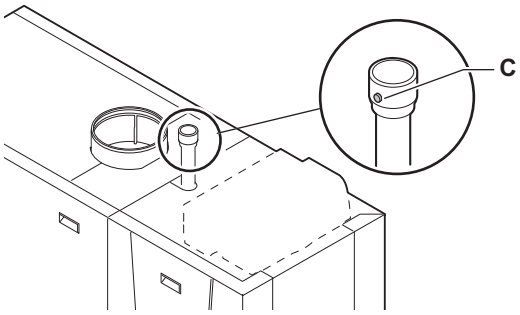
1. Check that the gas type supplied matches the data shown on the boiler's data plate.
2. Check the gas circuit.
3. Check the hydraulic circuit.
4. Check the water pressure in the central heating system.
5. Check the electrical connections of the thermostat and the other external connections.
6. Check the other connections.
7. Test the boiler at full load. Check the setting of the gas/air ratio and correct it, if necessary.
8. Test the boiler at part load. Check the setting of the gas/air ratio and correct it, if necessary.
9. Final activities.

**Note**
Following a service, complete the checklist.

**For more information, see**
Checklist for commissioning, page 76

### 7.1.1 Gas circuit

Fig.49 Gas inlet pressure measuring point




**Warning**
Ensure that the boiler is disconnected from the power supply.

1. Open the main gas tap.
2. Open the boiler gas tap.
3. Remove the casings on the inspection side.
4. Check the gas inlet pressure at measuring point **C** on the gas pipe. The pressure must be the same as the one shown on the data plate.

**Warning**
For authorised gas pressures, see: Unit categories, page 10

5. Check the tightness of the gas pipe, including the gas taps.
6. Vent the gas supply pipe by unscrewing measuring point **C**.
7. Tighten the measuring point again when the pipe has been fully vented.

### 7.1.2 Hydraulic circuit

1. Check the water pressure in the central heating system. If necessary, top up the central heating system.
2. Check the siphon; it should be fully filled with clean water.
3. Check the water-side connections for tightness.

### 7.1.3 Connections for the air and flue gas pipes

1. Check the flue gas outlet and air supply connections for tightness.

### 7.1.4 Electrical connections

1. Check the electrical connections.

## 7.2 Commissioning procedure

**Warning**
- Initial commissioning must be done by a qualified professional.
- If adapting to another type of gas, e.g. propane, the boiler must be adjusted before switching it on.

**See**
Adaptation to a different gas type, page 48

1. Open the main gas tap.
2. Open the boiler gas tap.
3. Switch the power on with the boiler's on/off switch.
4. Set the components (thermostats, control) so that heat is demanded.
   The start-up program will start and cannot be interrupted. During the start-up cycle, all segments of the display are shown briefly.

**Error during start-up procedure:**

In the event of a fault, a message with the corresponding code is displayed.

The meaning of the error codes can be found in the error table.

**See**
Manual for the control panel.

## 7.3 Gas settings

### 7.3.1 Adaptation to a different gas type

**Note**
Adapting to a different gas type for boiler Gas 610 ECO PRO: the properties described and the instructions apply to each boiler module.

**Warning**
Only a qualified installer may carry out the following operations.

The factory setting of the boiler is for operation with the natural gas group G20 (H gas).

Before operating with a different type of gas, carry out the following steps.

1. Set the fan speed as indicated in the list of parameters (if necessary). The speed can be changed with a parameter setting.

**See**
Manual for the control panel

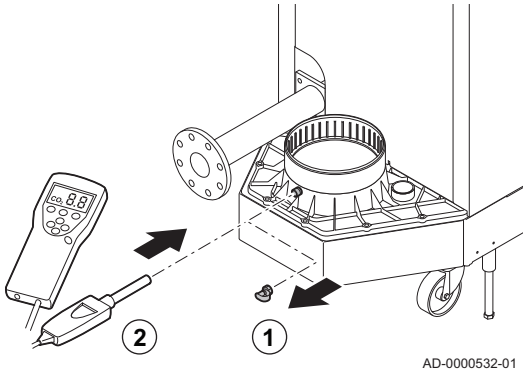
2. Check the setting of the gas/air ratio.

**For more information, see**
Checking/setting the combustion, page 48

### 7.3.2 Checking/setting the combustion

**Note**
Checking and/or setting the boiler Gas 610 ECO PRO: the properties described and the instructions apply to each boiler module. Make sure that the other boiler module is out of operation during this check and/or setting.

Fig.50 Flue gas measuring point




1. Unscrew the cap from the flue gas measuring point.
2. Insert the probe for the flue gas analyser into the measurement opening.

**Warning**
During measurement, seal the opening around the sensor fully.

**Note**
- The flue gas analyser must have a minimum accuracy of ±0.25% $O_2$/$CO_2$.
- The flue gas analyser must meet the requirements of BS 7927 or BS-EN 503793 and be calibrated according to the manufacturer's requirements.

3. Measure the percentage of $O_2$/$CO_2$ in the flue gases. Take measurements at full load and at part load.

## Checking/setting values $O_2$/$CO_2$ at full load

Fig.51 Setting to full load

1. Set the boiler to full load. Press the two keys at the same time. The H3 symbol appears on the display.
2. Measure the percentage of $O_2$/$CO_2$ in the flue gases.
3. Compare the measured value with the checking values in the table.

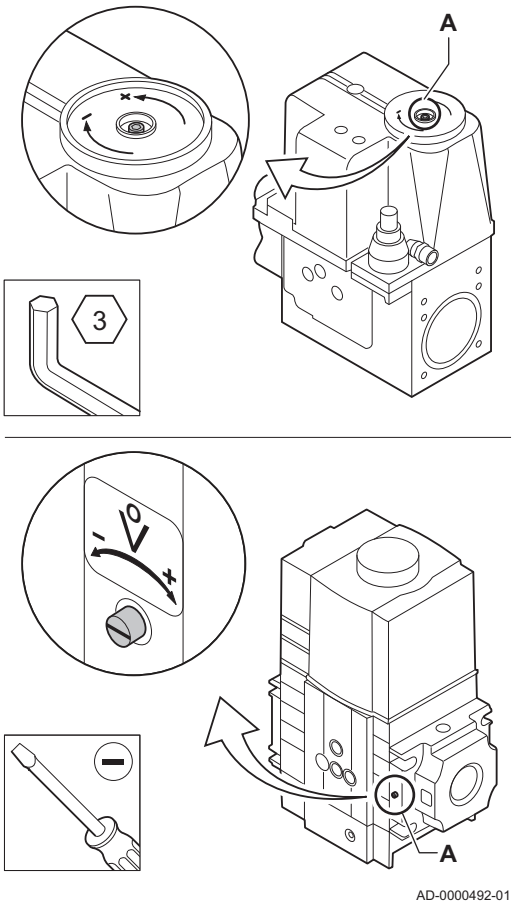
Tab.36 Checking/setting values $O_2$/$CO_2$ at full load for G20 (H gas)

| Values at full load for G20 (H gas) | $O_2$ (%) | $CO_2$ (%) |
|---|---|---|
| Gas 310 ECO PRO | 4,3 - 4,8(1) | 9,0(1) - 9,3 |
| Gas 610 ECO PRO | 4,3 - 4,8(2) | 9,0(2) - 9,3 |
| (1) Nominal value<br>(2) Nominal value | | |

**Caution**
- The $O_2$ values at full load must be lower than the $O_2$ values at part load.
- The $CO_2$ values at full load must be higher than the $CO_2$ values at part load.

4. If the measured value is outside of the values given in the table, correct the gas/air ratio.

Fig.52 Adjusting screw **A**




5. Using the adjusting screw **A,** set the percentage of $O_2/CO_2$ for the gas type being used to the nominal value. This should always be inside the highest and lowest setting limit. The direction in which the adjustment screw must be turned to increase or decrease the gas flow is indicated on the gas valve unit.

**Note**
The 5- to 9-section boilers are supplied with a different gas valve unit from the 10-section boiler. See drawing for the position of adjusting screw **A** for full load.

6. Check the flame through the inspection window.

**Note**
The flame must not blow off.

## ■ Checking/setting values for $O_2/CO_2$ at part load

Fig.53 Setting to part load

1. Set the boiler to part load. Press the − key several times until L3 appears on the display.
2. Measure the percentage of $O_2/CO_2$ in the flue gases.
3. Compare the measured value with the checking values in the table.

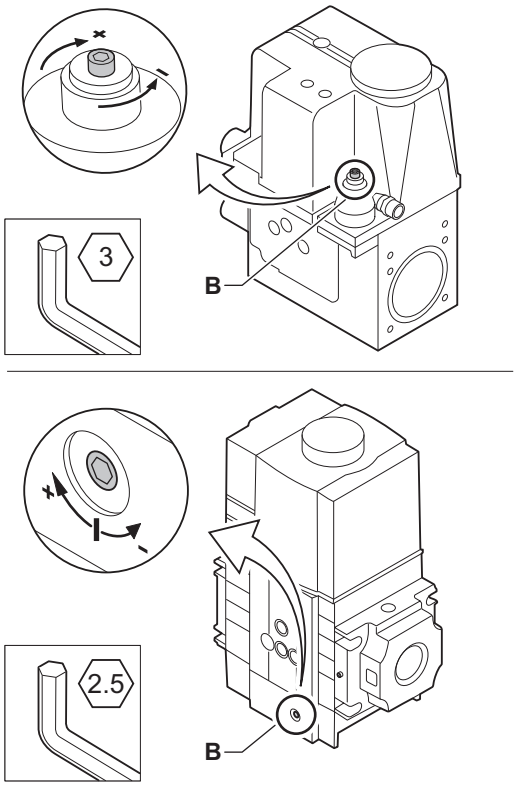
Tab.37 Checking and setting values for $O_2/CO_2$ at part load for G20 (H gas)

| Values at part load for G20 (H gas) | $O_2$ (%) | $CO_2$ (%) |
|---|---|---|
| Gas 310 ECO PRO | 4,8(1) - 5,4 | 8,7 - 9,0(1) |
| Gas 610 ECO PRO | 4,8(2) - 5,4 | 8,7 - 9,0(2) |
| (1) Nominal value<br>(2) Nominal value | | |

**Caution**
- The $O_2$ values at part load must be higher than the $O_2$ values at full load.
- The $CO_2$ values at part load must be lower than the $CO_2$ values at full load.

4. If the measured value is outside of the values given in the table, correct the gas/air ratio.

Fig.54 Adjusting screw **B**

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5. Using the adjusting screw **B,** set the percentage of $O_2/CO_2$ for the gas type being used to the nominal value. This should always be inside the highest and lowest setting limit. The direction in which the adjustment screw must be turned to increase or decrease the gas flow is indicated on the gas valve unit.

**Note**
The 5- to 9-section boilers are supplied with a different gas valve unit from the 10-section boiler. See drawing for the position of adjusting screw **B** for full load.

6. Check the flame through the inspection window.

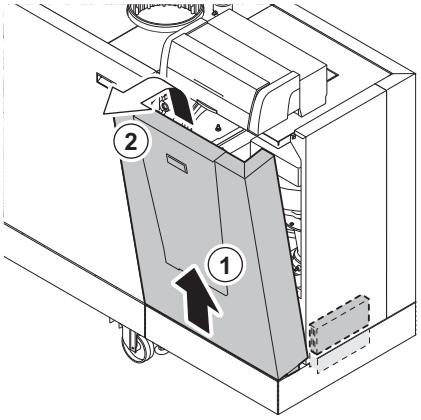
**Note**
The flame must not blow off.

7. Repeat the full load test and the part load test as often as necessary until the correct values are obtained.
8. Set the boiler back to the normal operating status.

## 7.4 Final instructions

1. Remove the measuring equipment.
2. Screw the cap on to the flue gas measuring point.
3. If installed: check the setting of the **Gps** minimum gas pressure switch. The pressure switch must be set at 10 mbar.
4. If installed: check the setting of the minimum gas pressure switch for **Vps** gas leakage control. The pressure switch must be set at 50% of the supply pressure (maximum 40 bar).
5. Reattach the casing to the inspection side.
6. Briefly press the **RESET** key to return the boiler to the normal operating status.
7. Heat the CH system up to approximately 70°C.
8. Switch the boiler off.
9. Vent the central heating system after approx. 10 minutes.
10. Turn on the boiler.
11. Check the water pressure. If necessary, top up the central heating system.
12. Specify the gas type used on the data plate.
13. Inform the user of the maintenance to be performed.
14. Hand over all manuals to the user. A documentation folder can be found in the frame of the boiler. Use it to store all boiler manuals together with other documents relating to the installation
15. Confirm the commissioning with a signature and a company stamp. The boiler is now ready for operation.

Fig.55 Position of the documentation folder

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**Note**
Complete the checklist.

**For more information, see**
Connecting the gas leakage control (VPS), page 44
Checklist for commissioning, page 76

# 8 Operation

## 8.1 Use of the control panel

**Note**
For operation of the Gas 610 ECO PRO boiler: each module has its own control panel

**See**
For more detailed information: Manual for the control panel

This includes information about changing and reading parameters, the meaning of error codes and deleting the error memory.

## 8.2 Start-up

Start the boiler up as follows:

1. Open the boiler gas tap.
2. Switch the power on with the boiler's on/off switch.
3. The start-up program will start and cannot be interrupted. During the start-up cycle, all segments of the display are shown briefly.
4. Check the water pressure. If the water pressure is below 0.8, the symbol will appear (only if a hydraulic pressure sensor is connected (accessory)). If necessary, top up the central heating system.

## 8.3 Shutdown

If the central heating is not due to be used for a long period of time, it is recommended that the boiler be disconnected from the power supply.

1. Turn the on/off switch to the off position.
2. Switch off the boiler's electrical connection.
3. Shut off the gas supply.
4. Keep the area frost-free.

**Caution**
In the event of low temperatures, we recommend that the installation continues to operate at a lower temperature. This will prevent freezing.

## 8.4 Frost protection

**Caution**
Tap the boiler and central heating system if you are not going to use your home or the building for a long time and there is a chance of frost.

Set the temperature control low, for example to 10°C.

If there is no heat demand, the boiler will only switch on to protect itself against frost.

If the temperature of the central heating water in the boiler drops too low, the built-in boiler protection system is activated. This system works as follows:

- If the water temperature is lower than 7°C, the heating pump switches on.
- If the water temperature is lower than 4°C, the boiler switches on.
- If the water temperature is higher than 10°C, the boiler shuts down and the circulating pump continues to run for a short time.

To prevent the system and radiators freezing in frost-sensitive areas (e.g. a garage), a frost thermostat or outside sensor can be connected to the boiler.

**Caution**
The boiler protection only protects the boiler, not the system.

# 9 Settings

## 9.1 List of parameters

**See**
Manual for the control panel.

## 9.2 Changing the parameters

The boiler's control unit is set for the most common central heating systems. These settings will ensure that virtually every central heating system operates effectively. The user or the installer can optimise the parameters as required.

**See**
Manual for the control panel.

**Caution**
Changing the factory settings may adversely affect the operation of the boiler.

## 9.3 Displaying the measured values

The control unit continually registers various values from the boiler and the connected sensors. These values can be read on the control panel of the boiler.

**See**
Manual for the control panel.

# 10 Maintenance

## 10.1 General

The cast aluminium/silicon heat exchanger forms the heart of the boiler. When combined with the special geometric shape, the flue gas pollution remains limited. Nevertheless, we recommend cleaning the flue gas side of the heat exchanger thoroughly during the annual inspection and service.

**Caution**
- Maintenance operations must be completed by a qualified installer.
- During inspection or maintenance work, always replace all gaskets of the disassembled parts.
- Replace defective or worn parts with original spare parts.

**Note**
Adjust the frequency of inspection and service to the conditions of use. This applies especially to boilers in constant use (for specific processes).

**Note**
For work on the Gas 610 ECO PRO boiler: The features and instructions described apply to each boiler module.

## 10.2 Standard inspection and maintenance operations

**Warning**
Always wear safety goggles and a dust mask during cleaning work (involving compressed air).

For a service, always perform the following standard inspection and maintenance operations.

**Caution**
- Check whether all gaskets have been positioned properly (absolutely flat in the appropriate groove means they are gas tight).
- During the inspection and maintenance operations, water (drops, splashes) must never come into contact with the electrical parts.

### 10.2.1 Preparation

Preparation prior to commencing inspection and maintenance activities:

1. First heat the boiler on high for about 5 minutes (return temperature 65ºC) to dry the heat exchanger on the flue gas side.

### 10.2.2 Checking the water pressure

1. Check the water pressure.
   The water pressure must be at least 0.8 bar. If the water pressure is too low the symbol will appear (only if a hydraulic pressure sensor is connected (accessory)).
2. If necessary, top up the central heating system.

**For more information, see**
Filling the system, page 45

### 10.2.3 Checking the ionisation current

1. Check the ionisation current at full load and at low load.

**See**
Manual for the control panel.

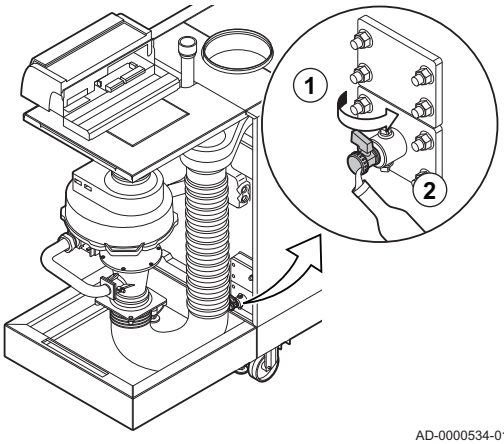
The value is stable after 1 minute.

2. Clean or replace the ionisation and ignition electrode if the value is lower than 3 µA.

**For more information, see**
Replacing the ionisation/ignition electrode, page 64

### 10.2.4 Checking the water quality

Fig.56 Filling/drain valve




AD-0000534-01

1. Fill a clean bottle with some water from the system/boiler from the filling/drain valve.
2. Check the quality of this water sample or have it checked.

**Warning**
More information regarding water quality requirements is available in our **Water quality instructions**. This manual forms part of the set of documents supplied with the boiler. Always adhere to the instructions in the aforementioned document.

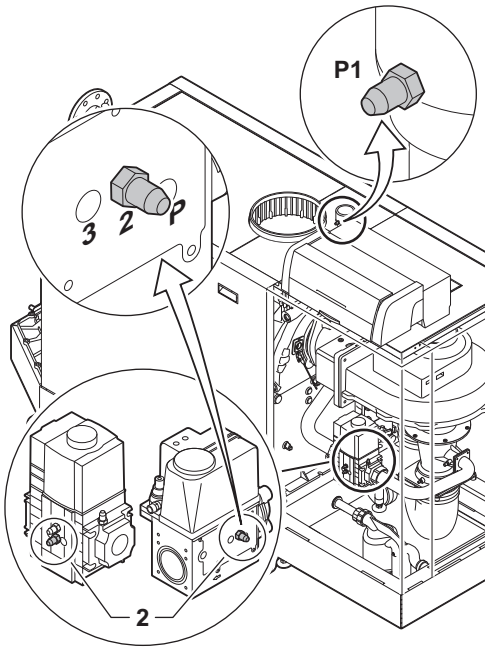
### 10.2.5 Checking the flue gas outlet/air supply connections

1. Check the flue gas outlet and air supply connections for condition and tightness.

### 10.2.6 Checking the gas filter

The gas valve unit on the boiler is fitted with a gas filter as standard. Check this for soiling.

Fig.57 Gas valve unit measuring points




AD-0000513-01

1. Set the boiler to full load.
2. Measure the gas inlet pressure via the measuring point **P1** on the gas pipe.
   This gas inlet pressure should be at least 17 mbar.
3. Check the gas inlet pressure at measuring point **2** on the gas valve unit.
4. Compare the measured values with the checking values in the table.

Tab.38 Minimum gas inlet pressure values at gas valve unit measuring point 2

| Gas 310 ECO PRO | Minimum value (mbar) |
|---|---|
| 285 | 14 |
| 355 | 13 |
| 430 | 10 |
| 500 | 10 |
| 575 | 10 |
| 650 | 10 |

5. If the measured value is lower than the control value, clean or replace the gas filter.

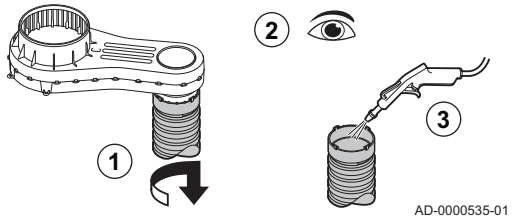
### 10.2.7 Checking the combustion

Combustion is checked by measuring the $O_2$/$CO_2$percentage in the flue gas outlet duct.

**For more information, see**
Checking/setting the combustion, page 48

### 10.2.8 Check the air supply hose

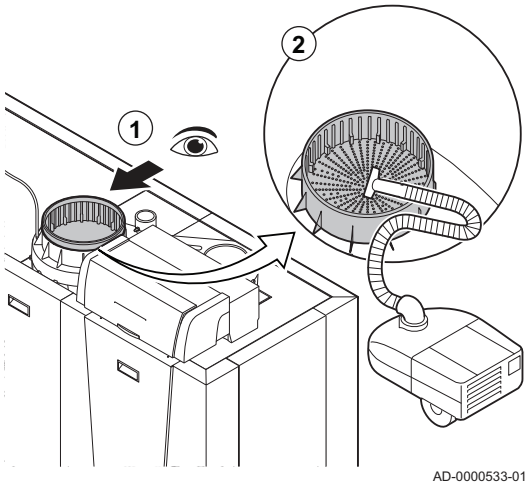
Fig.58 Air supply hose




1. Disconnect the hose on the air box side by loosening the bayonet fitting.
2. Check the hose for damage and pollution.
3. Remove the pollution from the hose with a cloth or soft brush.
4. Replace the hose if it is faulty and/or leaking.

### 10.2.9 Checking the dirt trap

Fig.59 Dirt trap

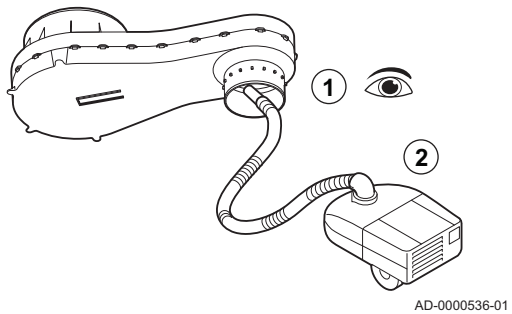



**Note**
- With room-sealed operation, disconnect the air supply pipe above the boiler to access the dirt trap.
- In room ventilated operation with an air supply filter, remove the filter to access the dirt trap.

1. Check the dirt trap on the air supply side for soiling.
2. First remove coarse soiling and clean the trap with a vacuum cleaner or a cloth.

### 10.2.1 Checking the air box 0

Fig.60 Air box

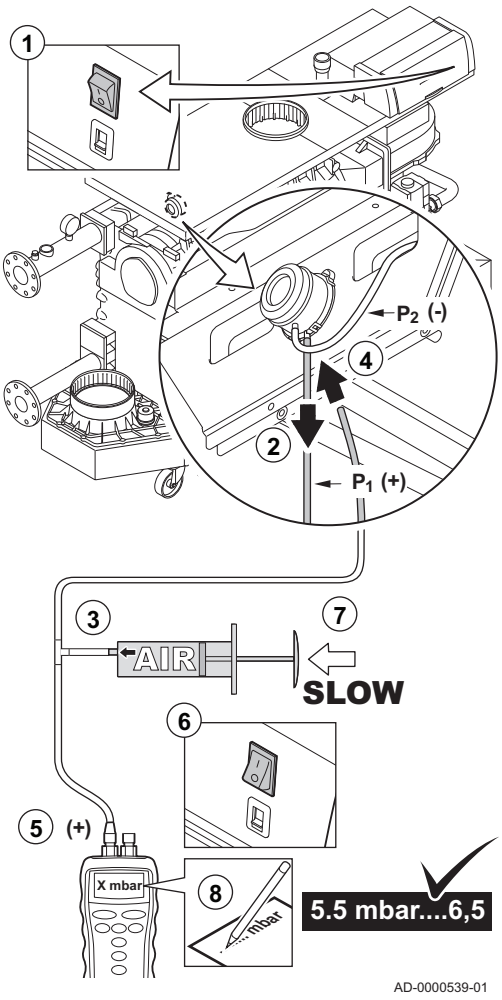



1. Check the air box for soiling.
2. Clean the dirty air box using a vacuum cleaner. Do this from the connection opening for the air supply hose.

**Note**
If the air box is dirty, the following components must also be dismantled and blown clean:
- Non-return valve
- Venturi
- Fan

### 10.2.1 Checking the PS air pressure differential switch 1

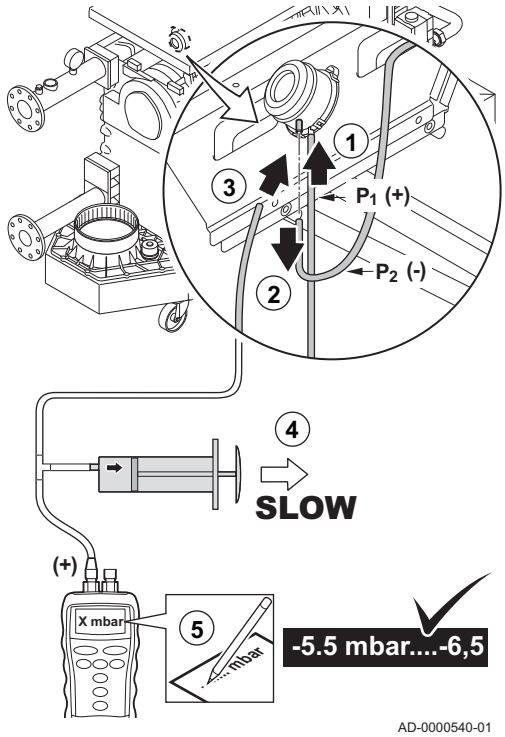
Fig.61 + side of the air pressure differential switch




#### Checking the air pressure differential switch + side

1. Switch off the boiler.
2. Disconnect the silicon hose on the + side (**P1**) of the air pressure differential switch.
3. Take a large plastic syringe and connect a T piece with a hose connected to the mouth.
4. Connect the + side of the air pressure differential switch to one end of the T piece with a hose.
5. On the other end of the T piece, connect the + side of a pressure gauge.
6. Turn on the boiler
7. Push the syringe in very slowly until the boiler goes into failure mode.
   Code E 12.
8. Make a note of the pressure indicated by the pressure gauge at that point.
   A switch pressure of between 5.5 and 6.5 mbar is fine. A lower or higher switch pressure indicates a problem with the air pressure differential switch.

Fig.62 – side of the air pressure differential switch

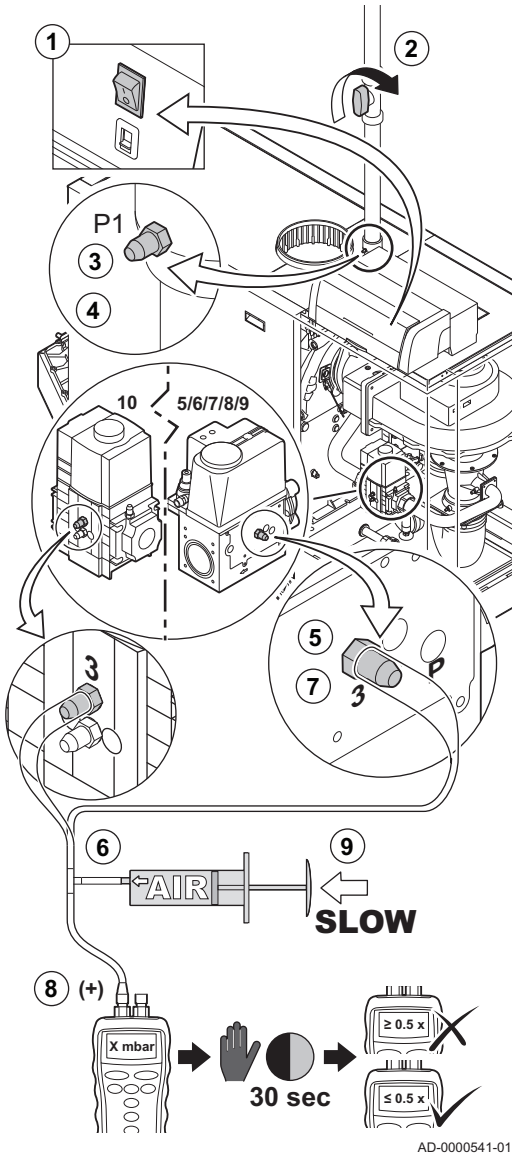



## ■ Checking the air pressure differential switch – side

1. Attach silicon hose on the + side (**P1**) of the air pressure differential switch.
2. Disconnect the silicon hose on the - side (**P2**) of the air pressure differential switch.
3. Connect the - side of the air pressure differential switch to one end of the T piece with a hose.
4. Pull out the syringe until the boiler goes into failure mode.
   Code E 12.
5. Make a note of the pressure indicated by the pressure gauge at that point.
   A switch pressure of between - 5.5 and - 6.5 mbar is fine. A lower or higher switch pressure indicates a problem with the air pressure differential switch.
6. Remove any soiling from all connection points for hoses and the air pressure differential switch.
7. Check the condition and tightness of the hoses of the air pressure differential switch.
   Replace the hoses if necessary.

### 10.2.1 Checking the VPS gas leakage control 2

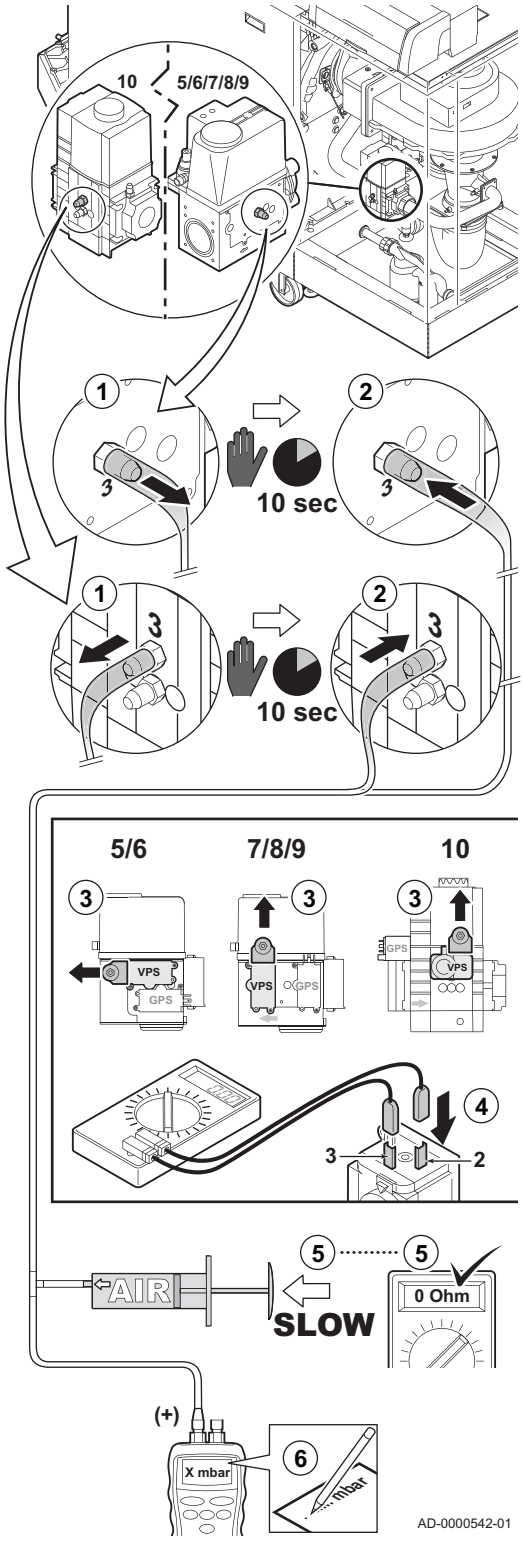
Fig.63 Checking the VPS for leaks




## Checking the VPS for leaks

1. Switch off the boiler.
2. Close the boiler gas tap.
3. Remove the pressure from the gas pipe by unscrewing the screw in measuring point **P1**.
4. As soon as the gas pipe is pressure-free, re-tighten the screw.
5. Open the screw at measuring point **3** on the gas valve unit (on the other side of the **VPS** pressure switch).
6. Take a large plastic syringe and connect a T piece with a hose connected to the mouth.
7. Connect one end of the T piece to measuring point **3** of the gas valve unit.
8. Connect the other end of the T piece to a pressure gauge.
9. Push the syringe in very slowly until the pressure gauge indicates the minimum inlet gas pressure value.
10. Check the measured pressure for about 30 seconds. If pressure decreases by more than half, this indicates a gas leak.
11. Replace the gas valve unit or the **VPS** if necessary.

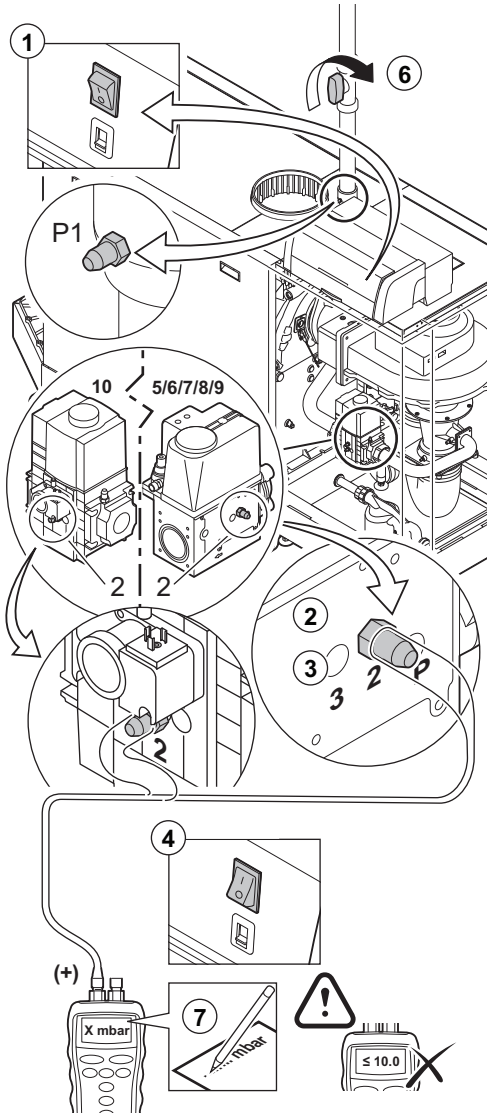
Fig.64 Checking the VPS switch value




## Checking the VPS switch value

1. Remove the pressure from the gas valve unit; first remove the hose that is attached to measuring point 3 of the gas valve unit (on the other side of the **VPS** pressure switch).
2. Wait approximately 10 seconds and reconnect the disconnected hose to measuring point *3 of the gas valve unit.
3. Remove the connecting plug from the **VPS** gas leakage control.
4. Connect an ohmmeter to terminals 2 and 3 of the **VPS**.
5. Push the syringe in very slowly until the ohmmeter indicates 0 Ohm.
6. Make a note of the pressure indicated by the pressure gauge at that point. If the measured pressure differs by more than 2 mbar from the **VPS** set-up value, set the pressure switch to the correct value or replace it.

Fig.65 Checking the Gps




### 10.2.1 Checking the Gps minimum gas pressure switch 3

1. Switch off the boiler.
2. Open the screw in measuring point **2** of the gas valve unit.
3. Connect a pressure gauge to measuring point **2** of the gas valve unit.
4. Turn on the boiler.
5. Set the boiler to part load.
6. Close the boiler gas tap very slowly until the boiler is blocked. Code 5T;9.
7. Make a note of the pressure indicated by the pressure gauge at that point. Compare the measured values with the checking values in the table. If the measured pressure is lower, set the gas pressure switch to the correct value or replace it.

Tab.39 Minimum gas pressure switch value

| Gas 310 ECO PRO | Minimum value (mbar) |
|---|---|
| 285 | 14 |
| 355 | 13 |
| 430 | 10 |
| 500 | 10 |
| 575 | 10 |
| 650 | 10 |

## 10.3 Specific maintenance work

Perform the specific maintenance work if this proves to be necessary following the standard inspection and maintenance work. To conduct the specific maintenance work:

### 10.3.1 General

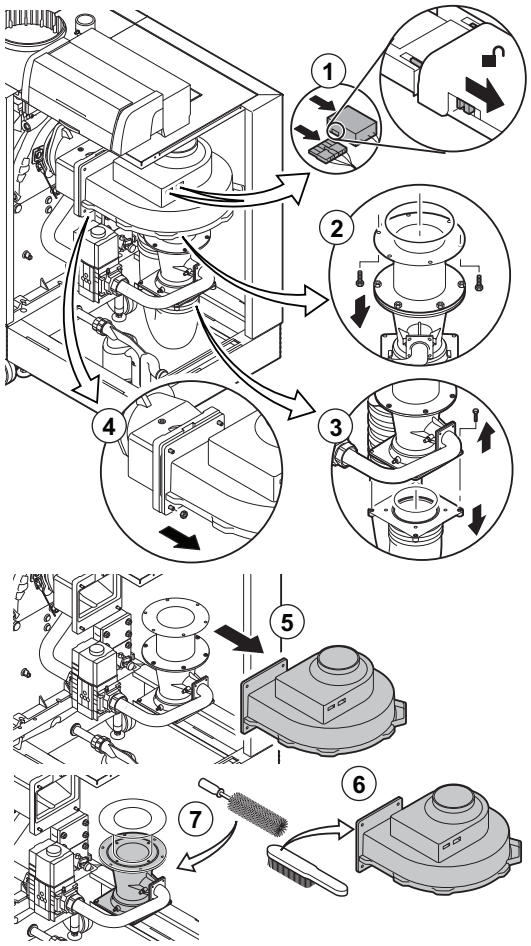
**Danger**
- Disconnect the boiler's electricity supply.
- Shut off the gas supply.

**Caution**
During inspection or maintenance work, always replace all gaskets of the disassembled parts.

**Note**
Following a service, complete the checklist.

## 10.3.2 Clean the fan and venturi

Fig.66 Clean the fan and venturi

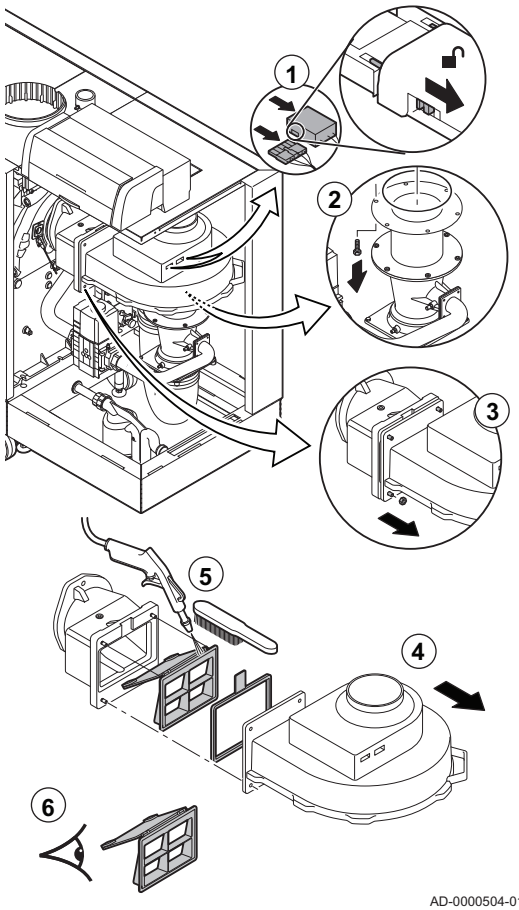



1. Remove the electrical connections from the fan. Push the safety slides on both sides of the power plug right to the back (using a small screwdriver, for example).
2. Unscrew the bolts from the extension piece under the fan. Support the gas valve unit, using a block of wood, for example.
3. Disconnect the air supply hose from the venturi.
4. Unscrew the nuts on the fan output.
5. Disconnect the fan from the adaptor.
6. Clean the fan with a soft plastic brush.
7. Clean the venturi with a soft plastic brush.
8. Reassemble the unit in reverse order.

**Note**
Reconnect the fan's electrical connection.

### 10.3.3 Cleaning and inspecting the non-return valve

Fig.67 Checking the non-return valve

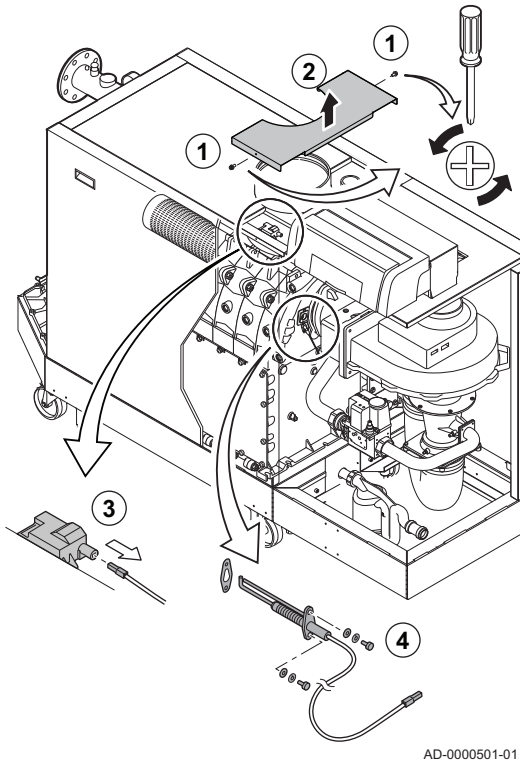



1. Remove the electrical connections from the fan. Push the safety slides on both sides of the power plug right to the back (using a small screwdriver, for example).
2. Unscrew the bolts from the extension piece under the fan. Support the gas valve unit, using a block of wood, for example.
3. Unscrew the nuts on the fan output.
4. Disconnect the fan adaptor.
5. Inspect the non-return valve and replace it if faulty or seriously damaged.
6. If the non-return valve does not need to be replaced, clean it with a soft plastic brush or compressed air.
7. Reassemble the unit in reverse order.

**Caution**
Reconnect the fan's electrical connection.

### 10.3.4 Replacing the ionisation/ignition electrode

Fig.68 Replacing the ionisation/ignition electrode




The ionisation/ignition electrode must be replaced if:

- The ionisation current is < 3 µA.
- The electrode is damaged or worn.
- The specific maintenance activities are carried out.

1. Unscrew the 2 screws on the middle top casing.
2. Remove the middle top casing.
3. Remove the plug of the electrode from the ignition transformer.

**Note**
The ignition cable is fixed to the electrode and therefore may not be removed.

4. Unscrew the 2 screws on the electrode and pull these forwards.

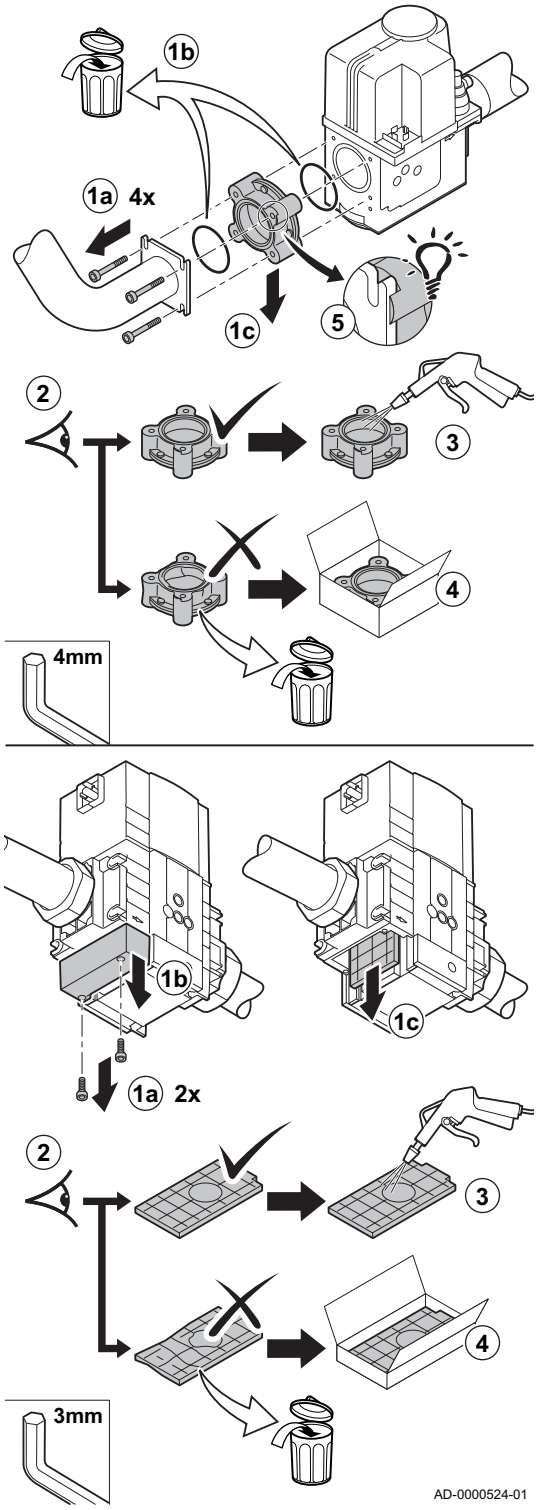
**Caution**
Do not fit the new electrode until the burner has been cleaned and refitted. This will prevent damage occurring.

5. Remove the entire component.
6. Fit the new ionisation/ignition electrode.
7. Reassemble the unit in reverse order.

**For more information, see**
Cleaning the burner, page 66

### 10.3.5 Clean the gas filter

Fig.69 Clean the gas filter



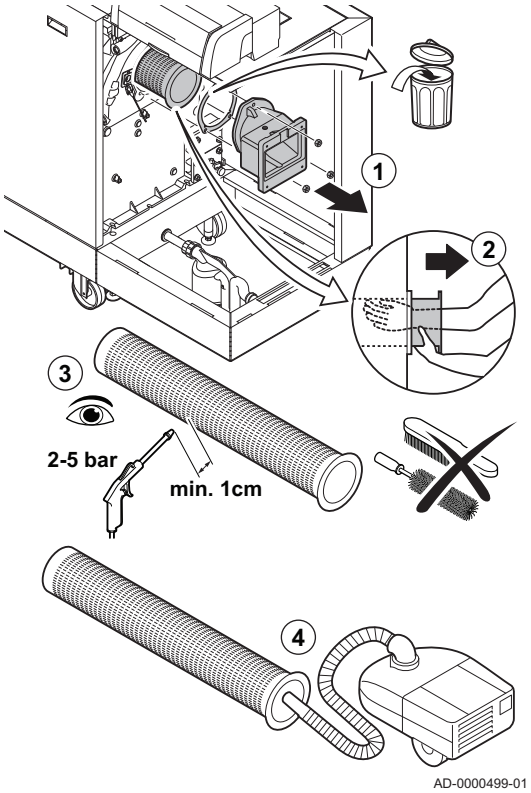

**Note**
The 5- to 9-section boilers are supplied with a different gas valve unit from the 10-section boiler.

1. Remove the gas filter.
2. Carry out a visual check.
3. Clean the gas filter without the use of liquids (shake it or carefully blow it clean).
4. Replace the gas filter if necessary.
5. Reassemble the unit in reverse order.

**Caution**
In this gas valve unit, the gas filter holder has a positioning ridge. Position this at the top left during assembly.

### 10.3.6 Cleaning the burner

Fig.70 Cleaning the burner




1. Unscrew the bolts from the adaptor and remove the adaptor.
2. Lift the burner out of the heat exchanger.
3. Check the burner and, if necessary, clean without touching it (e.g. with compressed air between 2 and 5 bars: maintain a minimum distance of 1 cm from the surface of the burner).

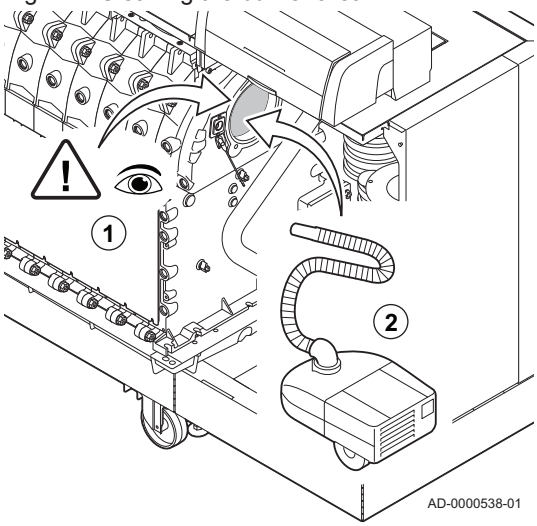
**Caution**
Never clean the burner's surface with a brush or similar item.

4. Carefully hoover the dirt from the inside of the burner.
5. Replace the burner if faulty or seriously damaged.

**Caution**
Do not refit the burner until the burner area, heat exchanger, condensate collector and siphon have been cleaned.

### 10.3.7 Cleaning the burner area

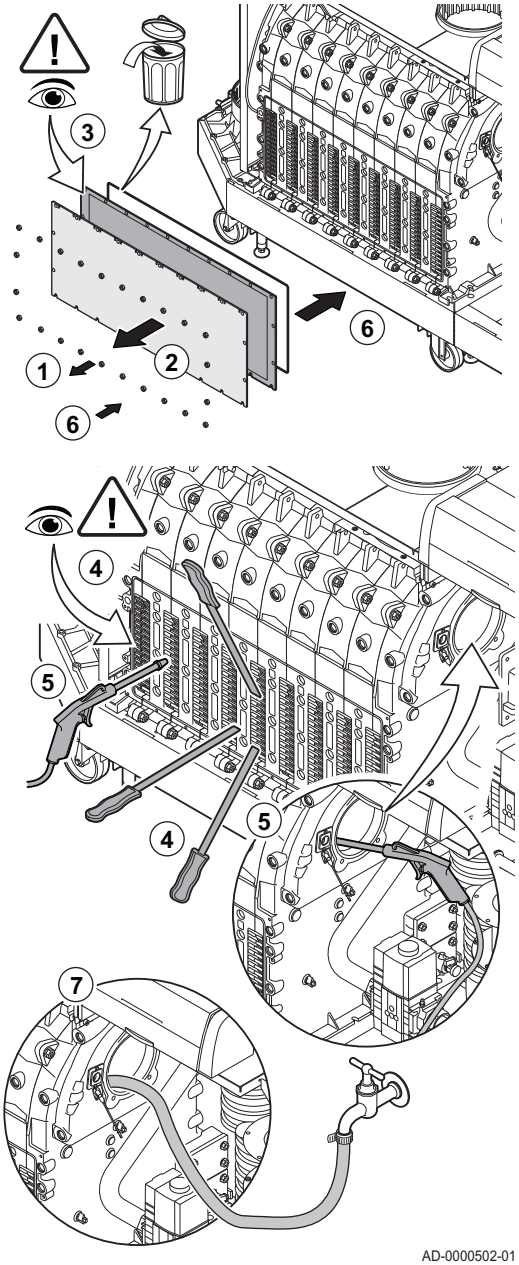
Fig.71 Cleaning the burner area




1. Visually inspect the burner area.
2. Remove any visible soiling with a vacuum cleaner.

## 10.3.8 Clean the heat exchanger

Fig.72 Clean the heat exchanger



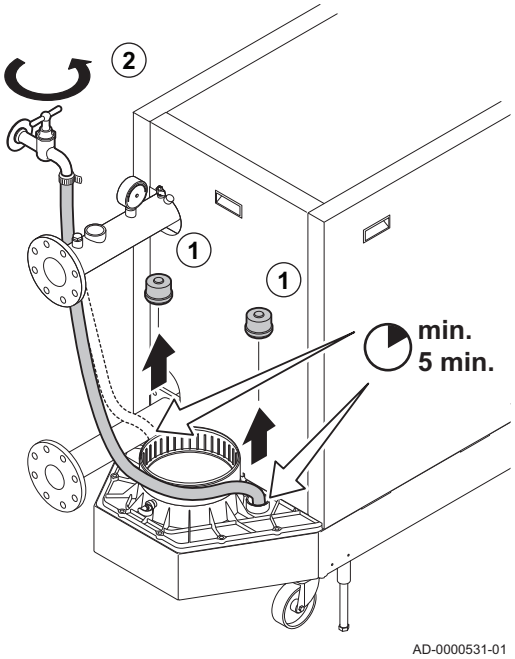

1. Unscrew the nuts from the inspection hatch on the heat exchanger.
2. Take the inspection trap off the heat exchanger and remove the insulation cloth.
   The insulation cloth may stick to the heat exchanger. Avoid damaging or tearing the insulation cloth. Remove the silicon insulation cord.
3. Inspect the insulation cloth and replace if it is faulty or seriously damaged.
4. Clean the areas between the pins of the heat exchanger using the special cleaning tool or cleaning knife (accessory). Always work from the bottom to the top. Move the cleaning knife between the pins horizontally and diagonally.

**Note**
A range of cleaning knives are available for the various boilers. Always use the cleaning knife specially designed for this boiler. This knife is 560 mm long.

5. Use compressed air to blow the cleaned parts through in turn. Do this from the service side and from the burner area.
6. Fit the inspection trap with the silicon cord and the insulation cloth.
7. Use clean water to thoroughly rinse the heat exchanger from the burner area.

## 10.3.9 Clean the condensate collector

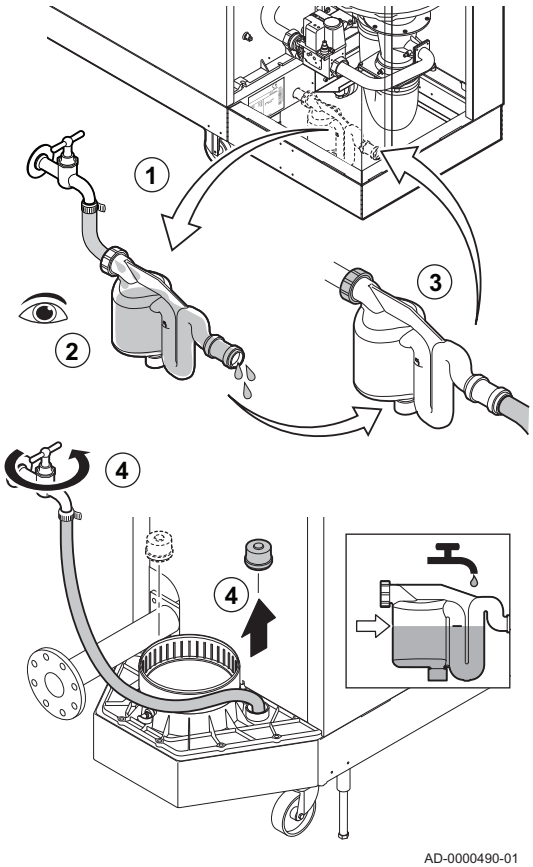
Fig.73 Clean the condensate collector




1. Loosen both the sealing caps on the condensate collector (in front of and behind the flue gas extraction connection).
2. Thoroughly clean the condensate collector with water. Rinse each side of the condensate collector for at least 5 minutes with the largest possible water flow.
3. Refit both sealing caps on the condensate collector.

### 10.3.1 Clean the siphon
0

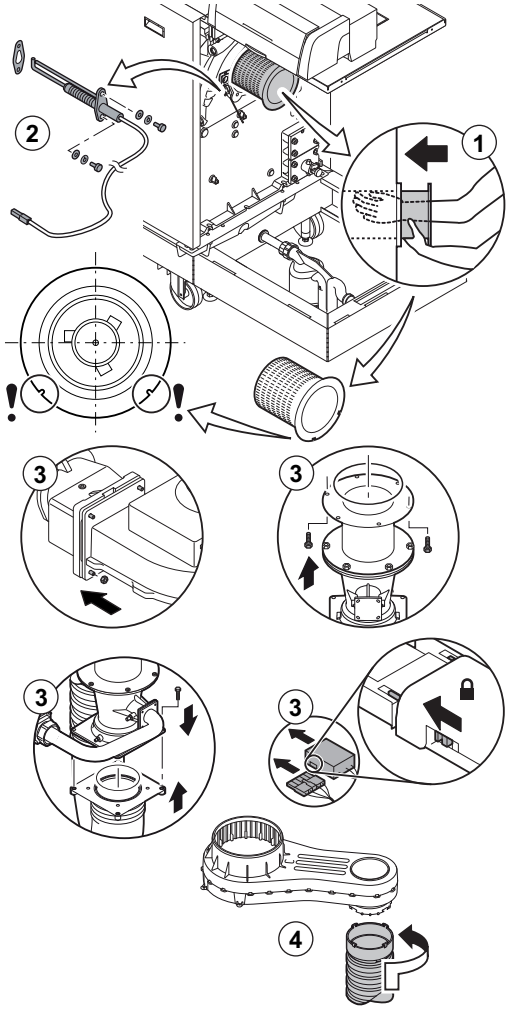
Fig.74 Cleaning the siphon




1. Remove the siphon.
2. Clean the siphon with water.
3. Put the siphon back in place.
4. Fill the siphon with water up to the mark via the condensate collector.

**Danger**
The siphon must always be sufficiently filled with water. This prevents flue gases from entering the room.

Fig.75 Remounting the burner




### 10.3.1 Remounting the burner
### 1

1. Fit the burner.

**Note**
The burner has 2 holes at the front. Position these on the 2 support pins at the burner opening.

2. Fit the new ionisation/ignition electrode.
3. Fit the venturi and the fan.

**Caution**
Reconnect the fan's electrical connection.

4. Fit the air supply hose.

### 10.3.1 Reassembling the boiler
### 2

1. Fit all removed parts in the reverse order.

**Caution**
During inspection and maintenance operations, always replace all gaskets on the parts removed.

2. Carefully open the water tap.
3. Fill the installation with water.
4. Vent the installation.
5. Top up with more water if necessary.
6. Check the tightness of the gas and water connections.
7. Put the boiler back into operation.

### 10.3.1 Putting the boiler back into operation
### 3

1. Open the main gas tap
2. Check the gas circuit.
3. Check the water pressure.
4. Check that there are no leaks on the hydraulic connections.
5. Check the flue gas outlet and the air supply.
6. Check the electricity supply.
7. Check the electrical connections.
8. Switch the power on with the boiler's on/off switch.

9. Check the gas inlet pressure at the measuring point **P2** on the gas valve unit.
10. Check the ionisation current.
11. Check the combustion.
12. Check that gas connections between the gas valve unit and the venturi are sealed.
13. Vent the air from the CH system.

**Note**
Following a service, complete the checklist.

# 11 Troubleshooting

## 11.1 Error codes

**Note**
Operating the Gas 610 ECO PRO boiler: the properties described and the instructions apply to each boiler module.

The boiler is fitted with an electronic regulation and control unit. The heart of the control is a microprocessor, the **Comfort Master©**, which both protects and controls the boiler. When a failure is signalled, the boiler stops or becomes locked. In the event of an error, a corresponding code is displayed.

The meaning of the error codes can be found in the error table.

**See**
Manual for the control panel.

**Note**
The error code is needed to find the cause of the error quickly and correctly and for any support from Remeha.

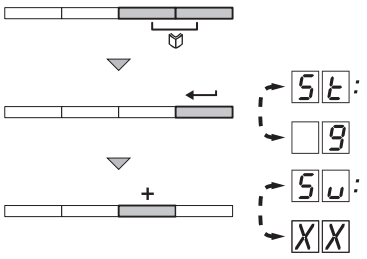
### 11.1.1 Blocking

A (temporary) blocking mode is a boiler status, resulting from an abnormal state. The display shows a blocking code (for example ST:9). The control unit makes a number of attempts to start the boiler again. The blocking codes can be read out as follows:

1. Press the two keys at the same time.
2. Confirm by pressing key ⟵.
   The display alternates between ST: and the blocking code 9.
3. Press the + key.
   Su appears on the display.

**Note**
The boiler automatically returns to operation once the cause of the blocking has been removed.

Fig.76 Blocking code




AD-0000089-01

Tab.40 Blocking codes

| Blocking code | Description |
|---|---|
| Su:0 | Parameter error:<br>• Reset dF and dU<br>• Restoring parameters |
| Su:1 | Maximum flow temperature exceeded:<br>• No flow or insufficient flow:<br>- Check the circulation (direction, pump, valves)<br>- Reasons for the heat demand |
| Su:3 | Maximum heat exchanger temperature increase has been exceeded:<br>• No flow or insufficient flow:<br>- Check the circulation (direction, pump, valves)<br>- Check the water pressure<br>- Check the cleanliness of the heat exchanger<br>• Sensor error:<br>- Check that the sensors are operating correctly<br>- Check that the sensor has been fitted properly |
| Su:4 | The maximum rate of increase in the flow temperature tolerated in the exchanger has been exceeded:<br>• No flow or insufficient flow:<br>- Check the circulation (direction, pump, valves)<br>- Reasons for the heat demand |

| Blocking code | Description |
|---|---|
| Su:5<br>Su:6 | Maximum difference between the flow and return temperature exceeded:<br>• No flow or insufficient flow:<br>- Check the circulation (direction, pump, valves)<br>- Check the water pressure<br>- Check the cleanliness of the heat exchanger<br>• Sensor error:<br>- Check that the sensors are operating correctly<br>- Check that the sensor has been fitted properly |
| Su:8 | No release signal:<br>• External cause: remove external cause<br>• Parameter error: check parameters<br>• Bad connection: check the wiring |
| Su:9 | Phase and neutral of mains supply mixed up:<br>• The mains connection is wired incorrectly: invert phase and neutral<br>• Floating network or 2-phase network: set parameter P34 to 0 |
| Su:10 | Blocking input is active:<br>• External cause: remove external cause<br>• Parameter error: check parameters<br>• Bad connection: check the wiring |
| Su:11 | Blocking input active or frost protection active:<br>• External cause: remove external cause<br>• Parameter error: check parameters<br>• Bad connection: check the wiring |
| Su:13 | Communication error with the SCU PCB:<br>• Bad connection with BUS: check the wiring<br>• SCU PCB not present in connection box: perform automatic detection |
| Su:14 | Water pressure is too low:<br>• The water pressure is too low:<br>- Check the water pressure<br>- Fill the boiler and the system with water<br>- Check the hydraulic pressure sensor setting<br>• Incorrect setting of the water pressure parameter P28:<br>Check water pressure parameter setting P28<br>• Water leakage |
| Su:15 | Gas pressure too low:<br>• No flow or insufficient flow:<br>- Check that the gas valve is fully opened<br>- Check the gas supply pressure<br>• Incorrect setting on Gps gas pressure switch on SCU PCB:<br>- Check whether the Gps has been correctly fitted<br>- Replace the Gps switch if necessary |
| Su:16 (1) | Configuration error or SU PCB not recognised:<br>• Wrong SU PCB for this boiler: replace SU PCB |
| Su:17 (1) | Configuration error or default parameter table incorrect:<br>• Parameter error in the PCU PCB: replace PCU PCB |
| Su:18 (1) | Configuration error or PCU PCB not recognised:<br>• Wrong PCU PCB for this boiler: replace PCU PCB |
| Su:19 (1) | Configuration error or parameters dF and dU unknown<br>• Parameter error: Reset dF and dU |
| Su:20 (1) | Configuration procedure active:<br>• Active for a short time after switching on the boiler: no action |
| Su:21 | Communication error with the SU PCB<br>• Poor connection: Check whether the PCU PCB has been correctly fitted in the connector on the SU PCB |

| Blocking code | Description |
|---|---|
| SU:22 | No flame during operation:<br>• No ionisation current:<br>- Vent the gas supply to remove air<br>- Check that the gas valve is fully opened<br>- Check the gas supply pressure<br>- Check the operation and setting of the gas valve unit<br>- Check that the air supply inlet and flue gas outlet are not blocked<br>- Check that there is no recirculation of flue gases |
| SU:24 | Gas leakage control fault:<br>• Bad connection: check the wiring<br>• Gas valve unit faulty: replace the gas valve unit<br>• VPS gas leakage control defective: replace VPS gas leakage control |
| SU:25 | Internal error in SU PCB:<br>• Replace SU PCB |
| (1) These blocks are not stored in the error memory | |

### 11.1.2 Lock out

If the blocking conditions still exist after various start attempts, the boiler goes into lockout (also called error). The boiler will also lock out if an error is signalled anywhere in the boiler. An error code will appear on the display. The error code is displayed as follows:

**In a red flashing display**:
- the symbol ⚠
- the symbol **RESET**
- the error code, for example E:01

**Note**
The boiler can only start operating again once the causes of the lock-out have been rectified and after pressing the **RESET**button.

## 11.2 Error memory

The boiler control unit has an error memory. It stores the last 16 errors that have occurred.

In addition to the error codes, the following data is also saved:

- Number of times that the error occurred: (n :XX).
- Boiler operating mode (ST:XX).
- The flow temperature (T1:XX) and the return temperature (T2:XX) when the error occurred.

To view the error memory, you must first enter the access code 0012.

# 12 Disposal

## 12.1 Removal/recycling

**Note**
Removal and disposal of the boiler must be carried out by a qualified person in accordance with local and national regulations.

To remove the boiler, proceed as follows:

1. Switch off the boiler's electrical connection.
2. Shut off the gas supply.
3. Shut off the water supply.
4. Drain the installation.
5. Remove the siphon.
6. Remove the air supply/flue gas outlet pipes.
7. Disconnect all pipes on the boiler.
8. Remove the boiler.

# 13 Spare parts

## 13.1 General

Only replace defective or worn boiler parts with original parts or recommended parts.

Send the part to be replaced to the Remeha Quality Control department if the relevant part is covered by the guarantee (see the General Terms of Sale and Delivery).

# 14 Appendix

## 14.1 ErP information

### 14.1.1 Product card

Tab.41 Product card

| Remeha - Gas 310 ECO PRO | | 285 | 355 | 430 | 500 | 575 | 650 |
|---|---|---|---|---|---|---|---|
| Seasonal space heating energy efficiency class | | A | A | A | - | - | - |
| Rated heat output *(Prated or Psup)* | kW | 261 | 327 | 395 | - | - | - |
| Seasonal space heating energy efficiency | % | - | - | - | - | - | - |
| Annual energy consumption | GJ | - | - | - | - | - | - |
| Sound power level $L_{WA}$ indoors | dB | 69 | 69 | 69 | - | - | - |

**See**
For specific precautions in relation to assembly, installation and maintenance: Safety, page 6

## 14.2 Checklist for commissioning

| No. | Commissioning tasks | Confirmation/measurement |
|---|---|---|
| 1 | Fill the system with water and check the water pressure | |
| 2 | Fill the siphon with water | |
| 3 | Vent the central heating system | |
| 4 | Check water-side connections for tightness | |
| 5 | Check type of gas offered. Is the boiler is suitable for the type of gas supplied? | |
| 6 | Check the gas supply pressure | |
| 7 | Check the capacity of the gas meter | |
| 8 | Enter the gas type on the data plate | |
| 9 | Check the gas tightness of the connections and gas pipes | |
| 10 | Vent the gas supply pipe | |
| 11 | If installed: check the setting of the **Gps** minimum gas pressure switch. | |
| 12 | If installed: check the setting of the **Vps** pressure switch for gas leakage control. | |
| 13 | Check the electrical connections | |
| 14 | Check the flue gas outlet/air supply connections | |
| 15 | Check the function and operational status of the boiler | |
| 16 | Check the air-gas ratio | |
| 17 | Remove the measuring equipment and close the measuring points | |
| 18 | Reattach the casing to the inspection side | |
| 19 | Set the boiler regulator to the desired values | |
| 20 | Instruct the user and hand over the necessary documents | |
| 21 | Confirm the commissioning | |
| | Date | dd-mm-yy |
| | Company name, signature of engineer | |

## 14.3 Checklist for annual maintenance

Tab.42 Checklist for annual maintenance

| Step | Inspection and/or servicing work | Confirmation and date | | | | |
|---|---|---|---|---|---|---|
| 1 | Check the water pressure | | | | | |
| 2 | Check the ionisation current | | | | | |
| 3 | Check the water quality | | | | | |
| 4 | Check the air supply/flue gas discharge connections | | | | | |
| 5 | Check the gas filter for pollution | | | | | |
| 6 | Check the combustion ($O_2$/$CO_2$) at full load and part load | | | | | |
| 7 | Check the air supply hose | | | | | |
| 8 | Check the dirt trap | | | | | |
| 9 | Check the air box | | | | | |
| 10 | Check the **PS** air pressure differential switch | | | | | |
| 11 | Check the **VPS** gas leakage control (if installed) | | | | | |
| 12 | Check the **GPS** minimum gas pressure switch (if installed) | | | | | |
| 13 | Clean the fan and venturi | | | | | |
| 14 | Clean and inspect the non-return valve | | | | | |
| 15 | Replace the ionisation/ignition electrode | | | | | |
| 16 | Clean the gas filter | | | | | |
| 17 | Clean and inspect the burner | | | | | |
| 18 | Clean the burner area | | | | | |
| 19 | Clean the heat exchanger | | | | | |
| 20 | Clean the condensate collector | | | | | |
| 21 | Clean the siphon | | | | | |
| 22 | Boiler installation (replacement of all gaskets removed) | | | | | |
| 23 | Put the boiler back into operation | | | | | |
| 24 | Confirmation of inspection | | | | | |
| | Date | dd-mm-yy | dd-mm-yy | dd-mm-yy | dd-mm-yy | dd-mm-yy |
| | Company name, signature of engineer | | | | | |

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